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ARCHIVES OF
PHYSICAL THERAPY, X-RAY
RADIUM

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RADIUM IN THE TREATMENT OF UTERINE HEMORRHAGE*

HAROLD SWANBERG, B. Sc., M. D., F. A. C. P.
QUINCY, ILL.

Probably the greatest achievements of radium therapy is in gynecology, and in this special field certain conditions of the uterus are most responsive to proper radium treatment. The purpose of this paper is to discuss the usefulness of radium in combating one of the symptoms of abnormal uterine pathology—*hemorrhage*.

Uterine hemorrhage is only a symptom, and before considering any therapy to control it, we should first endeavor to ascertain its cause. It is interesting to note that uterine hemorrhage is very prevalent, being one of the most frequent conditions the gynecologist is called upon to relieve.

Uterine hemorrhage occurs as one of two types—(a) menorrhagia or (b) metrorrhagia.

Menorrhagia is an excessive menstruation, being either prolonged in duration or increased in amount, or both.

Metrorrhagia is a uterine hemorrhage in the inter-menstrual period—an untimely bleeding.

*Read at Sixth Annual Meeting, American College of Physical Therapy, Chicago, Nov. 3, 1927.

By special arrangement this paper also appears in the March, 1928 issue of *The Radiological Review*.

CAUSES OF UTERINE HEMORRHAGE

There are many causes for menorrhagia or metrorrhagia. All arise from one of the following conditions:

1. Conditions of the pregnant state.
2. Changes in the uterine tissues not due to pregnancy or new growth.
3. New growths.
4. Those of endocrinal origin.
5. Diseases of adjacent organs.
6. Constitutional disease, acute; chronic.
7. Foreign bodies.

The principle indications for radium are in No. 2 and No. 3 of the above classification.

Success in the radium treatment of uterine hemorrhage, like every other form of therapy, depends primarily upon an accurate diagnosis being established. A carefully taken history and a thorough gynecologic examination should precede radium or any other treatment in order to ascertain the pathology present and the condition of the adjacent parts. It should be understood that radium is not indicated in all types of uterine bleeding.

INDICATIONS FOR RADIUM THERAPY

Radium is indicated, within certain limits, in the following uterine conditions, all of which may have hemorrhage as a symptom:

1. Malignant tumors.
2. Benign tumors (fibromyomata).
3. Simple functional, menorrhagia or metrorrhagia.
4. Menopausal and premenopausal hemorrhagia.
5. Chronic metritis.
6. Subinvolution.
7. Uterine fibrosis.
8. Chronic endometritis.
9. Membranous dysmenorrhea.
10. Puberty hemorrhage.
11. Chronic endocervicitis and cervicitis.
12. Uterine and cervical polypi.

Fig. 1.—A silver capsule measuring about 3.5 mm. in diameter containing 50 mg. of radium. The walls are .5 mm. thick.

Probably the most frequent cause of uterine bleeding is conditions associated with the pregnant state—ectobic gestation, threatened abortion, etc. Radium therapy has no place in these conditions, with the possible exception of some cases of uterine subinvolution.

1. In 50 per cent of the women who have uterine hemorrhage after the establishment of the menopause, some form of malignant disease of the uterus is present.

Radium is the method of choice by many of the foremost gynecologists for *carcinoma of the uterine cervix,* no matter at what stage the disease is discovered. Surgery has no place in the treatment of the disease with the possible exception of the first stage, which is infrequently seen. The Radium Institute of Paris reports 43.9 per cent of the doubtful and inoperable cases free from clinical evidence of the disease one year after radium treatment.

In carcinoma of the body of the uterus, a preliminary radium treatment should be given to control the hemorrhage and build up the patient, which is to be followed in about three weeks by complete hysterectomy, including both tubes and ovaries.

2. In patients more than 35 years of age, a sterilizing dose of radium is the ideal treatment for controlling the hemorrhage in uncomplicated cases of *uterine fibroids.* As a rule, one such treatment is all that is required.

3. A single sterilizing dose of radium will control the bleeding in more than 90 per cent of the patients suffering from *simple functional uterine hemorrhage.* It is the ideal treatment in patients more than 35 years of age.

Fig. 2.—Brass capsule (with flexible wire attached), the walls of which are 1 mm. thick, containing the silver capsule holding 50 mg. of radium.

4. Radium is practically a specific in *menopausal or premenopausal hemorrhage;* about 95 per cent of such patients being clinically cured from a single sterilizing dose.

5 - 8. In patients over 35 years of age suffering from *chronic metritis, endometritis, uterine subinvolution or fibrosis,* radium therapy gives good results. Sterilizing doses are necessary and frequently several such treatments, at two to three months intervals, are required.

9. Non-sterilizing doses are quite efficacious in patients suffering from *membranous dysmenorrhea.* Pain is relieved and the menstrual function is *not* disturbed if the proper dosage is applied.

10. Small doses of radium are almost a specific in *puberty hemorrhage.* Radium, how-

ever, must be used with *utmost* care so as not to damage the ovaries and should not be used until all other measures have been found ineffective.

11. Non-sterilizing doses of radium are indicated in *chronic endocervicitis and cervicitis,* especially when the chief symptom is leukorrhea. Curtis (Prof. of Gynecology, Northwestern University) reports 87 per cent recoveries in 104 patients treated with radium.

12. In *uterine and cervical polypi,* the growths should be removed surgically. If this is immediately followed by proper radium treatment, no recurrence is assured.

CONTRA-INDICATIONS FOR RADIUM

The principal contra-indications to intra-uterine radium applications are:

1. History of pelvic inflammation.

2. Associated pelvic disease or pregnancy present.

3. Subserous and pedunuculated uterine fibroids.

4. Very large uterine fibroids (size five months' pregnancy or more).

5. Radium should always be used with *great caution* in patients 35 years or younger.

When in any of the above conditions the use of operative interference is impossible, radium treatment may be resorted to quite justifiably and frequently with good results. Many times with large uterine fibroids there has been a heavy flow with severe secondary anemia, which makes such patients poor operative risks. In such instances radium may be used to check the hemorrhage and render the patient a good operative risk for eventual hysterectomy.

CONSTRUCTION OF THE RADIUM APPLICATOR

In most cases of non-malignant uterine bleeding, a 50-milligram radium applicator, adequately screened, is the proper one to use. The physician will take less chances if the radium is so filtered, that the gamma rays are only used and some arrangement provided to absorb the secondary rays generated in the walls of the filters. This may be accomplished in a very satisfactory way by placing the radium in capsules of .5 mm. silver and 1 mm. of brass, respectively. The whole being covered with rubber tubing about 2 mm. thick.

In the applicator we use, there is a brass or silver wire attached to the brass capsule containing the radium. This is enclosed in a piece of rubber tubing with a blind end. The radium capsule is tied in position at the blind end of the tubing. A short cross-arm rubber piece is placed on the applicator which may be readily moved. This fits snugly against the cervix when the portion containing the radium is properly introduced into the body of the uterus. When sufficient gauze is packed in the vagina against the cross-arm rubber piece, it holds the tube in correct position. This does away with the necessity of stitching the applicator to the cervix to maintain its position. Due to the wire in the rubber tubing, the radium applicator is semi-rigid which greatly facilitates ready insertion and at the same time permits the applicator to be bent to conform to the direction of the uterine canal.

TECHNIC OF APPLYING THE RADIUM

The patient is given castor oil and a douche the night previous to the planned treatment, and several cleansing enemas and a douche the following morning. A general anesthetic may or may not be necessary. A scopolamin-morphine hypodermic injection will make the application painless and keep thepatient comfortable. Under strict and keep the patient comfortable. Under strict aseptic precautions, the cervix is gently dilated, sufficiently to introduce the radium applicator. In most patients, especially in those over 35 years of age, a uterine currettage should be done and a specimen preserved for microscopic ex-

amination. The length of the uterine canal should be determined by means of a sound and the cross-arm rubber piece on the applicator so adjusted that when the radium is in the body of the uterus, the cross-arm piece will fit snugly against the cervix. A little K-Y Jelly placed on the end of the applicator will facilitate ready insertion. Following the insertion of the applicator, the entire vagina, including the anterior and posterior fornix, is packed with gauze. This must be done carefully, the purpose being to keep the radium in position in the uterus while holding the rectum and bladder *away*. These latter parts are quite sensitive to radiation. If the packing is thoroughly done it requires about ten yards of two-inch gauze.

The patient should be kept in bed in the prone position the entire time the radium is in the uterus. If unable to void, she should be catheterized every six hours. While the radium is in situ some patients will complain of nausea and vomiting. This, however, is usually not marked and disappears almost routinely with removal of the radium. After removal of the radium, the patient is placed in the Fowler position and permitted to be up the following day. A simple, non-irritating, vaginal douche (daily) is advisable for about a month after the treatment.

RADIUM DOSAGE

One of the most important points in the treatment of uterine conditions with radium is the proper dosage, especially in the initial treatment. This depends principally upon the age of the patient, except in malignant conditions, when large doses are necessary regardless of age.

In patients 35 years of age or less, 500 milligram hours of radium (50 milligrams for ten hours) is considered the maximum dosage for non-malignant conditions. A dosage greater than this may cause sterility and early menopause.

In patients more than 35 (preferably 40 years or more) the usual dosage is 1200 milligram hours (50 milligrams for 24 hours). This is considered a "sterilizing dose" and, in the majority of patients, one such application will bring upon the menopause with complete cessation of all uterine bleeding.

Uterine malignancies require still larger doses of radium (2400 to 3000 or more milligram hours) to control.

All conditions of the cervix require a slightly different technic of applying the radium than has been given above.

RESULTS OF RADIUM TREATMENT

Most patients suffering from non-malignant uterine hemorrhage will be entirely relieved by one sterilizing dose of radium. The hemorrhage may be relieved immediately, but more frequently it gradually diminishes and stops in

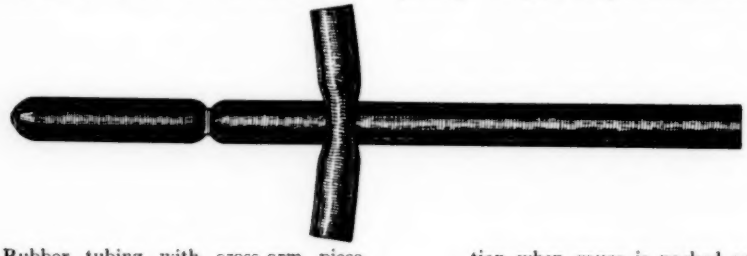

Fig. 3.—Fig. 3.—Rubber tubing with cross-arm piece containing the brass and silver capsules which hold 50 mg. of radium. This is an ideal applicator for treating the body of the uterus. This is about the length and thickness of an ordinary lead pencil. The short cross-arm piece fits against the cervix and holds the tubing in position when gauze is packed against it. A wire is attached to the capsule containing the radium (inside the rubber tubing) which makes the applicator semi-rigid and facilitates ready insertion. The applicator can be readily bent to conform to the direction of the uterine canal.

about a month or two. A few patients report an excessive flow at the period following the application of the radium, which is likely to happen if the radium is applied just before the expected period. The ideal time for applying radium is immediately upon the cessation of menstruation. When this is done, very frequently the patient never flows again, if a sterilizing dose is administered. Since the results of radium treatment may be prolonged, it is not advisable to consider a second application until eight weeks have elapsed. When sterilizing doses are given, one or two menstrual periods may occur before complete amenorrhea takes place. A watery discharge or persistent leukorrhea may appear for some weeks after a large dosage of radium. This is caused by the local reaction of the radium, and gradually subsides. It is usually so insignificant, that unless the patient's attention is called to it, she makes no complaint. There is a gratifying sequel—a persistent leukorrhea is frequently cured by the treatment.

About 50 per cent of the patients suffering from non-malignant uterine hemorrhage will be relieved by one non-sterilizing dose of radium. The results are not so certain as when the larger radium doses are applied. The remainder of such patients will require two or more non-sterilizing doses of radium, given at two to three-month intervals to successfully control the bleeding. The general postmenstrual history in these patients is that a period of amenorrhea takes place, varying from two to three months, with ultimate reappearance of the normal flow. A few patients (about 20 per cent) will completely fail to respond to these small doses of radium.

RADIUM VERSUS SURGERY

Radium should not be looked upon as a competitor of surgery in gynecology. It is far

Fig. 4.—This illustrates how the radium applicator appears when properly placed in the uterus in patients with uterine hemorrhage, fibroids, or carcinoma of body of uterus. The applicator is maintained in correct position by voluminous gauze packing.

better that both radium and surgery be regarded as useful methods in the cure of certain uterine conditions and intelligent selection based upon careful consideration of the peculiarities of each case, should determine which is to be used.

The best proof of the value of radium is in the fact that it is constantly being applied and recommended for use by the foremost surgeons and gynecologists in those conditions amenable to its use.

No one is in a better position to judge the efficacy of radium in uterine conditions, than is the trained gynecologic specialist. Note what the following gynecologists, who are among the leaders in their specialty in America today, state about radium:

Howard A. Kelly, A.B., M.D., LLD., F.R.C.S., F.A.C.S., Emeritus Professor of Gynecology, Johns Hopkins University:—"It is generally agreed among the leading lights that present day gynecology is certainly both medical and surgical and that radium has possibilities that the general rank of the profession fails to grasp."

Pascal B. Bland, M.D., F.A.C.S., Prof of Obstetrics, Jefferson Medical College:—"The application of radium to pelvic diseases is only in its infancy, but it has already in a measure, revolutionized the treatment of lesions formerly regarded as wholly surgical."

Roland E. Skeel, A.M., M.S., F.A.C.S., formerly Associate Clinical Prof. of Gynecology, Western Reserve Hospital:—"Within a decade radium and roentgen ray therapy have established a place for themselves in the treatment of myopathic hemorrhages, certain myomata and a vast number of carcinomas of the cervix, and in consequence of these considerations the true gynecologist contemplates with satisfaction a marked reduction in the number of dangerous, mutilating operations which were previously necessary."

W. C. Danforth, B.S., M.D., F.A.C.S., formerly Assistant Prof. of Gynecology, Northwestern University:—"Bleeding from the uterus occasioned by non-malignant growth-fibroids, and those which result from 'uterine insufficiency' form a numerous class of cases in which radium therapy is of great value. We have, upon the gynecologic-obstetric service of the Evanston Hospital, made use of radium for the treatment of about 200 cases of bleeding from non-malignant causes, myopathic or climacteric bleedings or fibroids. Of these a trifle more than 90 per cent have been relieved by one application. Radiation is without doubt the treatment of election in a large percentage of non-malignant bleedings of the uterus."

Charles C. Norris, A.B., M.D., F.A.C.S., Associate Prof. of Gynecology, University of Pennsylvania:—"In young women profuse hemorrhage of benign origin is not uncommon, and in these irradiation has a definite place. Many of these cases are encountered which resist all forms of medical treatment, and the choice must be made between irradiation and operation. About 50 per cent of such cases which have been treated by us (with radium) have been cured and 30 per cent benefited. A number of cases of pregnancy following the treatment have occurred in our series."

Many more such statements from other prominent gynecologists could be appended. It should be remembered that these men are surgical gynecologists, not radiologists, yet they use and prefer radium to surgery for certain conditions.

Radium has the following advantages over surgery:

1. There is no operative mortality.

2. Usually a general anesthetic is not necessary, hence there is no shock.

3. There are no infections, hemorrhage or other post-operative complications.

4. The patient is not confined for a long period.

5. Should radium fail, operation is always possible.

6. The menopause symptoms are not so marked (occur only when large doses of radium are used).

7. Radium can be used when surgery is feared, as when heart disease, extreme anemia, tuberculosis, diabetes or chronic nephritis, exist as a complication.

SUMMARY

1. Radium therapy is the method of election in a large percentage of uterine hemorrhages.

2. Success of radium treatment depends on (a) accuracy of diagnosis, (b) proper applicator and technic of application and (c) adequate dosage.

3. Radium is not a competitor to surgery, each being useful methods which require intelligent selection for their use.

4. The application of radium in uterine hemorrhage is comparatively simple, and many times may be successfully made by the physician or surgeon under the supervision of an experienced radium therapist.

CONCLUSION

Radium is one of the most valuable additions to the gynecologists' armamentarium today. It has enabled him to manage without operation a large percentage of uterine diseases. It is usually much easier to persuade a patient to submit to a simple procedure as the application of radium, than to gain her consent to undergo a major operation. Many women, from fear of the knife, suffer from some type of uterine hemorrhage and postpone consulting a physician until wrecked mentally and physically. With a better understanding of the wider use of radium, fewer women will be ordered to a hospital for what is considered a serious operation. The knowledge that a simple radium application will frequently offer relief (where a mutilating operation was indicated only a few years ago) should make women anxious to consult physicians early.

731 Hampshire street.

Treatment of Fissure Ani with Diathermy. J. Kowarschik, M. D., Wiener Klin Wschr., No. 9, 1927.

Treatment of anal fissure with high frequency current, in the beginning by Arsonvalisation and later by diathermy, electro-coagulation), was practised in France for years. The Doumer method consists of the following: A conical shaped metal electrode or still better a condensor electrode, is inserted into the rectum until it is past the sphincter. Then the high frequency current drawn from an Oudin or Tesla radiation spool, is allowed to act on the fissure. The fissure is superficially sloughed off and is thus destroyed This is brought about by the high frequency sparks showered from the electrode on the mucous membrane. The healing effect of high frequency sparks on epithelial defects and small wounds, is well established. Often the patient feels a considrable relief even after the first treatment. According to Zimmern and Turchini, the fissure is healed in about 8 treatments. Marque using the Doumer method had complete success in 94% of his treated cases.

In place of this miniature fulguration as it is effected with high gapped Arsonval currents, H. Bordier later recommended electro-coagulation of the fissure by the diathermy current. (The method is thoroughly described in his textbook.) The patient is in the knee-elbow position and the fissure is anesthetized with a solution of novocain, and then sloughed off by means of the proper electrode. A large plate fastened to the lumbar region serves as a second indifferent electrode.

SOME TYPES OF NEURITIC REFLEX PAINS AND THEIR TREATMENT BY PHYSICAL MEASURES*

WILLIAM MARTIN, M. D.
ATLANTIC CITY, N. J.

A proper consideration of such a large subject necessarily would consume considerable time over and above that usually allotted, therefore this paper will touch upon only the "high spots" of a few of the more important types.

When we think of neuritis it is in terms of a true inflammation of a nerve or set of nerves, and while we think of such a condition as being the cause of severe pain and painful effects, we also may have very severe reflex results from a peri-neural involvement in which there is not an actual nerve inflammation, but an irritation.

For the purpose of a full understanding of these referred or reflex pains one needs to have at least a "speaking acquaintance" with the great cerebro-spinal, autonomic and vegetative nervous systems and their distribution, otherwise the very common mistake will continue to be made of treating such conditions from the local rather than the reflex sources.

First we will consider those pains that originate with the cervical and brachial plexuses, which comprise occipital headaches, torticollis, painful shoulder and elbow, and cramps of the fingers with areas of anasthesia. These are the principal ones with which we most often come in contact. Another involving the upper right abdominal quadrant may be traced to the brachial plexus, but not all pains in that area are of this character we know from common knowledge.

A short resume of the nerve distribution involved will help to visualize what is meant to be conveyed here. The cervical plexus is formed by the anterior branches of the first four cervical nerves and its ten branches comprise four superficial nerves supplied to the integument of the head and neck, with the deeper branches, phrenic, communicans noni, two muscular and two communicating. The phrenic arises by three heads from the third, fourth and fifth cervical, descends through the mediastinum and is distributed to the inferior surface of the diaphragm. It sends filaments to the pericardium and pleura and communicates with the sympathetic plexuses of the abdomen.

The brachial plexus is formed by the union of the four lower cervical and first dorsal nerves. The fifth, sixth and seventh unite into one trunk and the eighth and first dorsal unite into another. Below the clavicle these trunks bifurcate, the two adjacent branches unite into the posterior cord and the remaining two into the outer and inner cords, the axillary artery being the dividing factor. Each of these cords bifurcate, but the two adjacent branches of the outer and inner cords unite over the artery and form the median nerve, leaving four other branches, the ulnar, musculo-cutaneous, musculo-spiral and the circumflex, the latter two being derived from the posterior cord.

While apologizing for this detailed description of the nerve distribution, it does seem necessary to have this refreshed in one's memory in order to have a clear grasp of the situation. Having these facts in mind it can be readily seen how an inflammation of a part of the plexus may be referred to some distal part of the distribution. Take the neuralgic occipital headaches which are so common and give these the proper treatment of the neuritic involvement of the nerves supplying the occiput and the relief so quickly secured will convince the

*Read at Sixth Annual Meeting, American College of Physical Therapy, Chicago, Nov. 3, 1927.

greatest skeptic. The same applies to some cases of wry neck, usually the one-sided type. In these cases we usually find a certain amount of bogginess along the nerve course, due no doubt to the inflammatory exudate cutting off circulation. Removal of this exudate will release the circulation and relieve the pressure pain and stiffness.

Painful shoulder simulating arthritis or bursitis may be due entirely to neuritic involvement. Roentgen ray examination will help to establish a diagnosis in these cases. With negative findings the static wave test for neuritis will decide the matter.

The precordial type of pain is the one of greatest moment to the sufferer and his family, for here the question of angina pectoris becomes of paramount importance. The making of a decision in these cases places the physician in a position that is not enviable, for so much depends upon it. In a previous paper* this matter was considered in a rather detailed manner, so it will receive here a more brief treatment, owing to lack of space and time.

In arriving at a diagnosis we have several points to consider. In the first place a careful history taken will help to gather such pertinent information as to previous attacks, their duration, type and other facts that are essential. If these attacks all have a similar origin and character and this is not in accord with cardiac symptoms, it would seem to favor a neuritic side. If also we have no hypertension or hyperpiesis, with myocardial insufficiency, we have further evidence of this. It must be remembered, however, that even with a neuritic type we may have these two features, so this is not conclusive evidence against a true angina. When there is a history of so-called rheumatic pains of the shoulder and arm without cardiac symptoms, we may consider this fair evidence favoring neuritis. The one fairly constant feature is the starting point of the pain. In true angina it usually starts at the cardiac or substernal area and shoots outward to the arm, while in neuritis it generally starts in the shoulder or arm and finally grips the heart. Another point, in true angina we may have unconsciousness with or following the attack and a feeling of marked exhaustion, while this does not apply to the other. Also there is no feeling of impending dissolution in the latter, while it is a feature of true angina. With these facts in mind we have a fair starting place to make the usual test for the neuritis which is a definite method of differentiating the two, but not conclusive in all cases, for it is possible to have both in combination, although this is rare.

The test mentioned is that by the use of the static wave current, the metal electrode being applied to the brachial plexus of the left side. If neuritis, we will have the painful response that increases with added current dosage. There are cases that show this evidence at one or two points of the plexus area, while others have a very sensitive response over the whole plexus. With this evidence, a history of previous "rheumatic" attacks of the shoulder, lack of hypertension and myocardial insufficiency, and the other features just enumerated, we have a fair evidence of a nerve involvement and not an angina. When this decision is made, the prognosis may be given accordingly.

Painful elbow and finger joints may simulate arthritis and will be easily mistaken for it, but the x ray and lack of swelling will help to differentiate. Treatment by the wave current applied to the plexus of the side affected will take care of these conditions, but there are some with areas of anasthesia that will require this application all down the nerve trunk to the fingers, as the inflammatory adhesions have made pressure upon the delicate neurons along the whole length. Of course these cases will be recognized to be very chronic with marked adhesions.

*True and Pseudo-Angina Pectoris, Diagnosis and Treatment.

The reflex pains of the lower part of the body include backache, knee joint pain, spasm of the calf muscles, painful heel, toes and arches. What is known as the "Morton toe" may be purely neuritic instead of the bony irregularity, but this must be differentiated by the use of the x ray.

The sciatic nerve arises from the sacral plexus which is formed by the union of the upper four sacral nerves and the fifth lumbar and a loop of the fourth, the two latter forming the lumbo-sacral cord. This lies upon the pryiformis muscle, has five branches, the superior gluteal, muscular, pudic, small sciatic and the great sciatic. The latter is a direct continuation of the plexus and makes its exit through the great sacrosciatic foramen, sending branches to the various muscles, and one branch, the articular, to the hip joint. This particular branch plays a very important role in sciatic neuritis, and is much neglected by physicians generally when treating sciatic neuritis. The main trunk terminates in the two popliteals at the lower third of the thigh. These in turn through their branches supply the rest of the leg and foot. The internal popliteal becomes the posterior tibial, the articular branches of which supply the knee joint, and the muscular branches supply the leg calf muscles.

These two facts illustrate how the knee joint and the calf may become involved in the inflammatory process. The irritable or inflamed nerve will produce a muscular spasm or the painful knee, just in so far as these branches are inflamed. The same applies to what is known as painful heel, or may be mistaken for the "Morton toe." For a positive differential diagnosis we have the x ray which will show either the evidence or lack of it in either case of bony deposits or irregularities. Painful foot conditions similar to flat foot may be the result of a nerve enervation from the inflammation, thus resulting in relaxation of ligaments and muscles, so that flat foot may be an end result if this relaxation is allowed to continue without treatment.

Etiologically we consider neuritis to be due to some infection when not traumatic. This infection may be either focal or systemic or both. Necessarily this infection must receive attention in order to secure results of treatment.

A true neuritis may be of two main types, interstitial and parenchymatous. The former involves the connective tissue of the nerve trunk and the latter the medullary substance and axis cylinders. Each may undergo the various stages of involvement, as acute, subacute and chronic. As the result of such an inflammation there is poured out an exudate which acts as nature's splint, binding down the nerve within its sheath and finally the contiguous tissues, the whole mass becoming firm and producing varying amounts of pressure upon the sore nerve, the result of which is first pain, then immobility, partial or complete, and as a later stage, anasthetic areas.

The treatment of neuritis and its referred pains not only means proper modalities, but a vision as to what areas are involved, so that treatment may be properly directed. One cannot expect first class results of treatment if third or fourth class judgment is used. Treating the nerve terminals instead of the main nerve or the branch involved or the particular area of inflammatory pressure, will get one nowhere. To illustrate this, in the precordial type mentioned early in this paper, treatment applied to the cardiac area will not bring results, even though some applications may be necessary there also in certain cases. The main point of attack should be the brachial plexus, carrying the treatment on over the main branches involved in each particular case. This can be determined in each case by the static wave testing. Those precordial cases with myocardial insufficiency will usually require diathermy of the heart in addition to the static wave current applied to

the plexus. This is what I mean by additional therapy to the chest area in certain cases.

In the knee and calf cases or the painful heel, when the x ray shows no bony or other changes to account for these, we treat the sciatic nerve both at the notch and along the trunk as required, not neglecting the articular branch. These cases of painful back that show no joint condition may be due to spasm of the pryiformis muscle from a sciatic inflammation. Treatment of this nerve condition will take care of this.

In considering treatment of these nerve inflammations we have before us the fact that as with all inflammations we find an exudate which nature provides for protection of the sore nerves, and this exudate becomes more and more dense as time goes on, so that eventually it becomes organized, and the pressure symptoms vary accordingly. We realize also that since the exudate forms more actively at points of exit of the nerves, either through bone or muscle, it will be at such points that much of the electrical energy must be directed, and not at distal parts where the pain seems to be located. The pressure must be relieved before we can hope for results.

Bearing these facts in mind, therapy of a type that will take care of the pathology must be used. We have in the mechanical static currents just the modality for this purpose. Not only does it follow that the exudate and general stasis are eliminated by these currents, but we also have a marked hyperemia or onrush of blood to the part under treatment so that the elimination of the waste products of the inflammation are carried off normally through the regular channels. In addition we have cell gymnastics for nerve restoration, all of which place these currents well in advance of all others in usefulness.

Since many do not have the static machines and do have high frequency apparatus, diathermy may be used to good advantage, followed by the Morse wave or any form of sinusoidal. The combination works well in many cases, but of course is inferior to the static currents.

Diathermy may be used in conjunction with the static currents in practically all cases, for the increased hyperemia adds to the value of the other. Constitutional upbuilding will be called for in some cases as long suffering devitalizes the patient. In such cases resort may be had to various forms of radiant energy, according to the particular needs.

In using the static currents we have for first choice the static wave which is usually followed by indirect sparks. To those who may not be conversant with these, a brief statement may be of value. The patient sits upon an insulated platform, attached to the positive pole of the machine with the negative grounded, the two poles together as the current is turned on. With the metal electrode applied to the chosen area, the poles are slowly separated and the patient feels under the metal the sensation of motion at first, then a slowly or quickly increasing sensation of pain. The dosage depends upon the width of separation of the spark gap and is regulated to the patient's tolerance. The time of treatment varies with the case, fifteen to twenty minutes over each area usually, but this must be decided according to the merits of the case. The sparks are given with the same polar arrangement, but a metal crook is used to connect the platform instead of the wire to the patient. The sparking electrode is attached to a second ground chain, and as it is pointed to the part, a spark jumps, causing sharp, quick contractions. Both forms of current have the mechanical side for their usefulness, as has been explained, but we find in addition there is a marked sedative effect upon the inflammed nerve after the first few treatments, but before this effect becomes noticeable, we may and in many cases do have a marked increase of soreness over the area treated. To the writer this is explained by the fact that as the exudate is carried off, the nerve becomes sensitized and

therefore more sore, but the sedative effect soon asserting itself, we find an increasing tolerance to the treatment, and progress is noted by this in a large number of cases.

What was stated earlier in the paper about not treating the distal area for the pain may be somewhat elucidated. Having considered this earlier with the nerve distribution, we need only to bear this in mind and apply the electrode at the point of origin. For instance, in precordial pain of neuritic origin, the electrode should be applied to the left brachial plexus, either using one sufficiently large to cover the plexus, or as the writer prefers, using small ones, 3 by 4 inches, for instance, applied to the two or three parts of the plexus, giving each area from ten to fifteen minutes. This is preferred since some parts of the plexus are more involved than the other and one can control the pain better. The larger electrodes will not give as painful an effect as a rule, except at the most painful small part, and it would seem logical to assume that under this condition there will be less ability to release the infiltrate quickly. This is a matter of opinion and experience.

When diathermy is used in conjunction with the static current, we may use it either before or after, according to what effect we desire. If hyperemia for added effect of the static current, use it before. If for sedative action upon the sore nerve, use it after the other.

What was stated about the part to be treated in precordial pain holds good for all other reflex conditions. Find out where the origin is and treat there, even though you may have to follow the nerve course to the distal part, as sometimes has been the case in long standing conditions. Success will usually come if this policy is followed, but in no other way will it be secured. To illustrate, the writer has known of an experienced physician applying a long electrode to the calf of the leg for muscle cramp, when it should have been applied to the sciatic notch. A number of weeks were lost, with much suffering as that condition can cause, when a few treatments properly applied later brought prompt relief.

In those cases of painful foot which appear to be "Morton toe" but show no bone pathology, we must treat the sciatic nerve for curative relief, and not the foot. There are cases that require some local treatment also, but this alone will not bring the desired result. Since practically all of these cases are of long standing, we will find some relaxation of the arches, therefore after the acuteness of the pain has been eliminated, we can build up the musculature by regulated exercises. Here the sinusoidal current will find its niche, as it has marked value in such conditions. The writer might go right on along these lines, but will desist now on account of the length of the paper. In conclusion it will suffice to say that there are few types of cases that puzzle the average physician as do these referred pains, and it behooves us all to be alert to always investigate them for the site of origin and treat them accordingly. As in all chronic conditions we must have before us the watchwords, patience and perseverence, if we hope to reach the desired goal.

ELECTROTHERMIC METHODS IN THE TREATMENT OF INOPERABLE CANCER OF THE BREAST*

WILLIAM H. SCHMIDT, M. D.
PHILADELPHIA, PA.

Cancer of the breast is one of the most frequent forms of cancer that the physician is called upon to treat, as well as the most fatal, when the condition has become firmly established. The education of the public on the recognition of cancer has done a great deal toward bringing these cases to the attention of the physician in the early stages, and has greatly increased the chances of permanently curing them. Many cases are not discovered until they are fairly well established, as is evidenced by patients who report for examination within a few days of first discovering any symptoms, and in whom we find a well established tumor with metastatic glands in the axilla. Surgical operation has given very good results in the early cases, but even in those cases, there is occasionally a failure, and we should not rest content until we discover means of making our results more certain. In the well established cases, there is much less chance of success by surgery alone. The percentage of failure is all too large, and our enthusiasm is quickly diminished as prompt recurrence follows unassisted surgery. Recently we have had placed at our disposal a high frequency current produced by radio tubes, which causes such a rapid disintegration of the tissue that it cuts like a knife, leaving only a thin layer of coagulation, and sealing all but the larger vessels. The use of this current has been advocated in the treatment of cancer of the breast, the cutting current being used instead of the knife. This is undoubtedly a great advance, and can only result in good. The coagulated edges undoubtedly prevent the spreading of a certain number of cells, as the most frequent site of recurrence is along the line of the scar. This method is being used with considerable regularity in certain clinics, and we should soon have some statistics to show whether the results are better or not. While, undoubtedly, it is an improvement over straight surgery, the effects of the current are confined to such a minute area of tissue, that any hope for very great benefit should not be entertained too strongly.

The use of x ray and radium is undoubtedly of great value in this disease, although its efficiency varies with the type of tumor. The undifferentiated type of tumor responds well, but so few of the breast cases are of this type, that as a rule, the radiation treatment must be pushed to the limit. Cancer of the breast is usually covered by an inch or more of other tissue, so that the full efficiency of the treatment does not readily reach the tumor, and it is necessary to cross-fire in order to get the proper amount of radiation into the growth. It would seem as a general principle that the use of x ray before operation is indicated and will certainly have a tendency to prevent the spread of the disease during the operation.

The use of radium is also indicated for similar reasons. In cases where we have a nodule in the breast, and no glands involved in the axilla, the use of buried radium is of value, followed by external radiation, either x ray or radium, to the entire lymphatic drainage area and the axilla. The difficulties in getting sufficient radiation into a tumor, as well as its uncertainty in effects, lead us to believe that these cases are better treated by a combination of radiation and surgery.

Following operation, there can be no question but that post-operative radiation is of value in every case.

*Read before the Joint Spring Meeting of the American Electrotherapeutic Association and the American College of Physical Therapy, Washington, D. C., May 16, 1927.

Frequently we are called upon to treat cases of cancer of the breast which are absolutely inoperable when seen. As a rule, these patients have concealed the presence of a growth, believing that it will get well of its own accord, and only reveal its presence when forced to do so by pain and suffering, or a maloderous discharge from the ulceration. These inoperable cases fall into classes: In the first class the involvement of the breast is very extensive, the glands in the axilla being enlarged, and the patient very toxic. Very little can be done in such instances, as the patient has practically reached the end of her disease and will succumb in a very brief period of time. As a palliative in these cases deep x ray therapy may be tried, and with very little hope of success. The other class is usually a scirrhus type which frequently exists for a long period of time without involving the glands. There is usually marked fibrous tissue formation, and some attempt at limiting the growth. Ulceration eventually takes place and the tumor becomes fixed to the chest wall. Bleeding, discharge and suffering are the accompanying symptoms. At other times, we will find a large ulceration, superficial in character, but occupying a large part of the breast tissue. These cases are considered absolutely inoperable by the surgeon, even though the glands are not involved. Radiation has practically no effect on such a growth as the tumor cells are well differentiated and very resistent to radiation. The frequent bleeding, discharge and pain are very wearing on the patient, and they quickly become debilitated. It is in this latter class that we are able to do a vast amount of good by employing the electrothermic methods. Of course it must be realized that in treating an advanced case of this kind, the chances of cure are very slight, as almost invariably some distant metastasis will develop in the lungs or bones, and eventually terminate the patient's life. It is possible, however, to entirely remove the lesion and have it heal over completely, thus relieving the patient of pain, suffering and the discharge, and the constant drain of repeated hemorrhages from the ulcerated surface.

A number of cases treated in this way have been given a lease of life and comfort amounting to three years or more, and when death does occur from internal metastasis, it is always much more merciful than it would have been without this treatment.

In treating a large mass on the breast by the electrothermic method, the patient should be prepared in the usual manner as for a surgical operation. A general anesthetic should be employed as a matter of choice, because infiltrating a large amount of tissue in close proximity to a malignant growth of this character is not to be recommended. The bipolar current is selected and a large indifferent pad about twelve inches square is placed under the patient's shoulders or under the buttocks, being sure that there is no clothing between the pad and the skin. The active electrode is a needle about four inches in length with a sharp point, and held in a suitable holder. The operation is started by making a line of destruction in the healthy tissue wide of the growth, and entirely circumvallating the growth. After this, the needle is inserted into the tissue through this area of coagulation, and the needle directed in an oblique manner under the breast. In this way, we continue the treatment until the entire circumference of the breast has been treated. The destruction is carried down close to the ribs, but extreme care should be exercised that the destruction does not involve the healthy periosteum. A sharp knife should then be taken and the incision made through the coagulated area, thus loosening the coagulated tissue all the way around. Several firm retractors are then placed upon the mass, and the edge of the breast forcibly pulled up. The tissue may be further loosened by the knife until we reach the limit of the coagulated area, which may be indicated by the first signs of bleeding. The knife should then be laid aside, and the current reapplied under the breast

in the tissue which has not been coagulated. At this stage it will probably be found best to insert the needle more or less parallel with the chest wall, modifying the current somewhat so that damage is not done to the ribs. After this reapplication, the knife may again be used, and the tissue further loosened until the entire mass is removed.

Occasionally it will be found that the mass is of such a character that a technique of this kind cannot be fully carried out. It may be necessary in certain locations to insert the needle directly in the carcinomatous tissue in order to thoroughly destroy it and to cut off the blood supply. After removing the mass in the manner indicated, a careful inspection should be made of the chest wall in order to determine whether any diseased tissue still remains or not. The final stage of the operation has now been reached. In this step, we can apply a rather intense current to the entire skin edges of the growth, plunging the needle into the tissue, and securing considerable coagulation and heat penetration for a distance beyond the area actually destroyed. After the edges have been thoroughly treated in this manner, the base should then be treated. The thickness of tissue remaining on the chest wall is now probably very slight, and the strength of the current should be reduced considerably as compared to the strength we have been using previously. Any area of diseased tissue should be thoroughy destroyed, and the entire base should be treated with the current in a careful manner. It is perfectly possible to produce destruction of the periosteum of the ribs. If the ulceration has involved the ribs, and they are already exposed or involved in the diseased process, the current should be carefully applied to the ribs, and they should also be destroyed. A final careful examination should be made to determine that all disease has been reached and destroyed. The area should then be painted with tincture of iodine, or a solution of mercurochrome. A large pad well coated with vaseline is then applied over the area, and the patient returned to bed.

The after treatment is important, and the patient should be carefully watched. As a rule, there is practically no pain following an operation of this character. If pain should exist, it should be promptly relieved with opiates. The original dressing may be allowed to remain for two or three days when it should be removed and the area carefully irrigated with antiseptic solution, and again painted with mercurochrome. In about five days' time, the coagulated tissue will begin to separate and become moist, and show considerable discharge. From this time on, the breast requires frequent dressings, at least once a day, and occasionally twice a day. As the slough proceeds to soften and loosen up, the discharge increases and the tissue gradually separates around the edges and from the body. Any loosened slough should be carefully removed by means of a scissors, but no attempt should be made to remove slough which might result in bleeding. It will require from ten days to two weeks for the slough to entirely loosen up and separate from the healthy tissue, at which time it will be found that the edges and base are covered with a healthy granulating tissue. This granulating base should be carefully inspected and watched for the presence of active malignant tissue. As a rule, there is not much difficulty in differentiating the healthy granulation from malignant granulation. They appear to have a deeper red color, and very much firmer in consistency, and invariably show a line of demarcation between the healthy and the diseased tissue. If, unfortunately, recurrence should appear, it should be treated immediately. This can usually be done without much difficulty under a local anesthesia, by using a mild current. If no recurrence make their appearance, the granulations will quickly fill in the depression and the epithelium will start to grow over from the edges. As a rule, no attempt is made to skin-graft these cases, and they are allowed to epitheliumize themselves. This takes a considerable length of time. If the area is quite large, it may require two months or more before the lesion will be covered with epithelium. In the meantime, it should receive daily cleans-

ing and dressings with gauze, well coated with vaseline or cold cream. For a considerable period of time, the area is very delicate, and we frequently will find breaks in the epithelium. These should be watched carefully, and if granulations appear, they should be cut down with a mild current. As soon as the epithelium has covered the entire area, it is well to dispense with further dressings, and allow the tissue to be exposed to the air, as it will become firm and more resistent in this way.

These patients invariably show a rapid improvement in health and strength, and are able to return to a normal life with freedom from pain and discomfort. This method has been of wonderful assistance in treating this unfortunate class of cases, and the results have been most satisfactory. While no permanent results can be expected, the relief from suffering and the prolongation of life amply justify its use and offers a means of benefiting another heretofore hopeless class of sufferers from cancer.

POST-OPERATIVE RECURRENCE

Any surgeon who has operated on many cases of cancer of the breast can recall many instances in which after a thorough operation, there will appear small nodules of recurrence. The most likely spot for this is along the line of incision. At other times, we will see them appear in areas where the needle is passed through the skin, or again, they may appear anywhere on the skin of the chest, or even on the back. As a rule, these nodules are confined to the skin, and do not involve the deeper layers. The earlier they are treated, the better chance there is of eradicating them.

Further use of surgery is hazardous in that it may serve to simply spread the disease. The electrothermic method is very useful in this condition. We have a means whereby we can destroy these nodules at the earliest possible moment, and the fact that blood and lymph spaces are sealed up instantly by the current renders the possibility of further dissemination very unlikely. A recurrent nodule, as has been described, should be treated just as quickly as it is observed. If it is small and well localized, a drop or two of novocain injected into the surrounding tissue will produce a perfect anesthesia, and the nodule can then be destroyed by the current. Much will depend upon the size of the nodule as to the kind of current to be used. As a rule, the monopolar current is sufficient in most instances. After regulating the spark, the needle is brought in contact with the nodule, and the current allowed to pass until a distinct desiccation has taken place. In this way, the entire nodule is thoroughly destroyed. It is well to go quite deeply in these cases, and produce destruction well beyond the growth. If the nodule is very small, it may be allowed to slough after this preliminary desiccation, but if the nodule is large in size, it is well to use scissors and cut out a portion of the desiccated area, and again apply the current to the base, so that we are sure to get beyond the disease both laterally and in the depth. If the patient presents a number of nodules on the chest-wall, or back, it is better to treat them under gas anesthesia. Multiple nodules suggest a wide distribution through the skin, and all procedures which involve opening the blood and lymph channels should be avoided as much as possible, thus contraindicating local anesthesia. These patients under gas anesthesia can be treated thoroughly, and a number of nodules destroyed in a very brief period of time. The technique, of course, remains the same. In small nodules, it is not necessary to remove the desiccated tissue, and in the larger nodules, this should be done thoroughly and a second application made to the base.

Any case of cancer of the breast which shows these post-operative recurrent nodules should receive the benefit of thorough radiation either by x ray or radium. Of course, it must be realized that recurrent nodules of this sort are not of hopeful significance, and probably at

best, our efforts will ony servle to delay the fatal termination in most instances. However, there are cases in which the recurrent nodule is the only evidence remaining, and in this event, its thorough destruction by the electrothermic method should serve to eradicate the disease entirely.

Cancer of the breast is so common that we should employ every means at our command to overcome the disease. The electrothermic method is limited in that its effect does not extend but a short distance beyond the tissue, which is actually destroyed. We can never tell in a case whether the small recurrence which is apparent is the only disease present in the patient's body or not. Our duty, therefore, is to treat it as thoroughly as possible with a hope that there may not be other areas of disease present. The electrothermic methods have increased our ability to successfully handle many of these cases, and if we can only prevent further surface extension, and prolong the patient's life for one or two years, it is well worth while.

Recurrent carcinoma of the breast is a very distressing and painful condition. If we can control these external manifestations and still not entirely eradicate disease from the patient's body, it will be found that the terminal stages from internal metastasis is not nearly as distressing as it would be otherwise. The method, therefore, has its special indications, and should be employed where there is a possibility of helping the patient, even in the slightest degree.

CONCLUSIONS

Certain types of inoperable cancer of the breast are beyond hope of benefit from surgery or radiation.

The electrothermic methods offer a chance for temporary relief to selected cases.

Results have been a prolongation of life and relief from pain and suffering.

Constant vigilance with prompt destruction of the first sign of recurrence are important, with the hope that it may be the last remnant of the disease.

Medical Arts Building, 16th and Walnut streets, Philadelphia, Pa.

Radiations for Children. Rene Weil, M. D., Journal de Medicine De Paris, No. 11, Mar. 14, 1927.

Ultra violet rays, x rays and radium occupy a very important place in diseases of children.

I. In certain diseases ultra violet rays judiciously employed, can and should be the remedy almost to the entire exclusion of all others. This holds true in the following diseases:

1. Rickets—The younger the patient the earlier the cure.

2. Convulsions and spasmodic conditions of early childhood—Infantile asthma and tetany.

3. Hypotrophy and athresia—Constitute a positive indication.

4. The anemias of early childhood are clinically ameliorated and the blood picture improved. It can justly be asked to combine iron medication with ultra violet rays.

5. Impetigo and pyodermitis — Children were healed by no other medication. They were literally saved, from the general as well as from the local point of view, by ultra violet rays.

6. Tuberculosis—Where is was a case of tuberculous peritonitis, or osseous tuberculosis, or ganglionated tuberculosis, closed or fistulated. It is not indicated in pulmonary tuberculosis with a febrile condition.

7. Glandular insufficiency.

II. X rays are indicated in three diseases of children:

1. Adenopathies.
2. Hypertrophy of the thymus.
3. Leukemias.

III. Radium is the best treatment for angiomas because of its ease of application, its harmlessness, and the certainty of obtaining a cure with hardly a scar left. It must be understood that only the tuberous angiomas are meant, which are very sensitive to radium, —and not the flat or wine spotted angiomas which are very resistant to radium. It is well always to remember that the angioma is removed sooner if the child is treated as early as possible.

THE INFRA RED AND ULTRA VIOLET RAY IN THE TREATMENT OF BRONCHIAL ASTHMA*

HARRY B. WILMER, M. D.
GERMANTOWN, PHILADELPHIA, PA.

It is with great hesitation that I appear before this body today to make the following presentation on the use of the infra red ray and ultra violet ray in the treatment of bronchial asthma. Inasmuch as I am only an internist and not a trained physical therapist, I beg that you may be lenient in your criticism of my seeming ignorance of the technical points of this important branch of medicine.

After reading several articles in the literature on the use of the rays and investigating its supposed action, I determined to try it as an adjunct in the treatment of asthma. I was surprised to find that it had a definite field and was a most valuable adjunct in the treatment of many forms of asthma. Asthma is a most puzzling disease and requires the most painstaking investigation before a diagnosis can be made and proper treatment instituted. Before taking up the actual use of the rays in the treatment of asthma, allow me first to point out to you the different types of asthma that are now definitely recognized:

(1) *The Thermal Type.* In this type the patient complains of the asthmatic attacks occurring immediately upon leaving a warm or hot room and going into the cold, or vice versa; and again, it may be only a warm or cold draught which will precipitate an attack; or he may be walking in a cold wind, and thus bring on an attack. It has been my experience that I have seen few cases who react to nothing else but cold or heat. I have found in this type of case that the patient has been at some time in the past, or is at the present, sensitive to some pollen or animal emanation, and has developed a definite bacterial sensitivity which has become engrafted upon an already sensitive mucous membrane. I have never been able to find, through the cutaneous test, one of these cases sensitive to any food protein.

Miss L. M., age 41 years. Chief complaint, asthma, constant sneezing and marked coryza. Twenty-five years ago patient had an attack of rose cold, which persisted until six years ago, when the hay fever symptoms disapperaed. Since that time the only symptoms are constant sneezing, coryza and asthmatic attacks brought on by sudden changes in temperature, and especially on leaving the warm office and going out into the cold air outside. Also attacks may be brought on by sitting in the open trolley.

Mother has had hay fever, but no other members of the family have been affected. The patient has had several operations on the nose at different times, but has found no relief. On performing the cutaneous test upon this patient, I found that timothy reacted only slightly, but no other reaction showed. As this patient presented herself for treatment in the late fall of 1923, I decided to try an autogenous bacterin made from the nasal mucous membrane, which was given with complete relief of symptoms in six weeks from time of starting treatment.

(2) *The Chemical Type.* This is the type of patient who develops an asthmatic attack on inhaling any pungent odor, such as certain vapors, formalin, turpentine, ammonia, sulphur dioxid, irritating coal or wood smoke, the smoke from a gasoline motor, and even highly scented flowers and perfume. In this type of case, as in the thermal type, I have never seen a case that did not show a sensitivity or give a history of the same to the pollens, animal emanations, and occasionally, house dust.

Mrs. N., age 36 years. Chief complaint, asthma of ten months' standing. Present illness started about ten months ago during an attack of grippe and severe bronchitis. The attacks are intermittent, occurring

*Read at Sixth Annual Meeting American College of Physical Therapy, Chicago, Nov. 3, 1927.

only when she feels chilly, or as if an attack of grippe were coming on. She has been in the habit of taking a grippe capsule, which had been prescribed for her, and immediately the attack of asthma would appear. The prescription contained aspirin, and upon instruction never to take aspirin again, the patient has been free of asthma.

(3) *The Neurotic and Atmospheric Type.* In this type the patient is highly neurotic, and asthmatic attacks are precipitated by fright, sorrow, hysteria, or any sudden emotional outburst; and in the atmospheric type is seen the patient who develops an attack of asthma just before a thunderstorm or any sudden change in atmospheric pressure. These two types are extremely difficult to diagnose, but in my experience these patients have in several instances shown a weak sensitivity to pollen or animal emanations, plus a markedly depleted physical condition, due to some long-standing infection or general mental strain. I believe these cases can be classed among the cases of endocrine dysfunction.

(4) *The Pollen Type.* There is little to say concerning this type, as the cause is easily found by the cutaneous test. This type may be perennial as well as seasonal. Do not overlook the fact that there is, in almost all of these cases, a secondary bacterial infection of the mucous membrane, and I believe that in almost every instance the cause of the asthmatic attacks in the pollen type is due to bacterial invasion, plus the presence of the pollen itself. I feel that the constant bombardment of the mucous membrane by the pollen lowers the physical resistance of the patient, and the mucous membrane is made a fair field on which the bacteria my grow in profusion, with a consequent bacterial protein sensitivity produced. In order to carry out my theroy, I should add that asthmatic attacks are rarely seen occurring until at least three or four weeks have elapsed after the hay fever begins.

(5) *The Animal, Epidermal and Food Protein Type.* In this type are classified the patients sensitive to the food and animal proteins. If the asthmatic attack is caused by the animal proteins, it will readily be shown by the cutaneous test. On the other hand, if it be food protein sensitivity, the offending protein is not always easy to locate, and, as I have said before, an exhaustive study should be made before the patient is considered non-sensitive. It must be borne in mind that the absolute withdrawal of food from the diet may give a negative test. This should be remembered, as the evidence that a particular food is causing the trouble may be so great that the food will be withdrawn, and a later test may give a negative reaction to that food.

(6) *The Bacterial Type.* In this type of patient the cutaneous test is negative throughout, although there may be a history of hay fever or asthmatic attacks being caused by contact with animals. Almost always there is a history of asthma. The method of diagnosis in these cases is one of elimination alone, and no case should be diagnosed a bacterial one until all methods of diagnosis have been exhausted. There is no doubt in my mind, however, that a bacterial sensitivity may be engrafted upon, or may be the direct cause of, asthma in any of the foregoing types classified above.

(7) *Asthma Due to Mediastinal Growths.* This group includes those individuals suffering with reflex manifestations due to the presence of neoplasms in the mediastinum, such as the presence of an enlarged thymus gland, enlarged mediastinal glands, carcinoma of the oesophagus or trachea, etc.

(8) *Asthma Due to Definite Fibrotic Changes of the Lung Tissue and Bronchitis.* In this type is seen the individual with marked emphysema with advanced fibrotic changes following repeated attacks of asthma over a long period of time; with marked residual air and spasmodic cough which precipitates the attack.

(9) *Asthma Due to Cardiac Decomposition with Portal Stasis.* Here is seen the patient who is able to transact his business, but suddenly and without warning is stricken by a severe attack of asthma, the attack lasting for a week or more, associated with edema and enlarged liver, marked enlargement of the superficial veins, etc.

TREATMENT

Now that the different types of asthma have been presented, allow me to take up in each type the use of the infra red and ultra violet rays in their treatment:

(1) *The Thermal and Chemical Type.* In these types the rays can only be used as an adjunct to the usual desensitization methods, as the majority of these cases are definitely allergic. However, I have found that in almost all of this type of case there is a secondary bacterial protein sensitivity which is greatly benefited by the use of the ray, thereby causing a more rapid desensitization.

(2) *The Neurotic or Atmospheric Type.* In this type the role played by the ray is of greater benefit, as these patients are of a highly neurotic type, have definite vasomotor changes and are unquestionably endocrine in character. I believe that the ray is invaluable in the treatment of these cases and if used long enough will produce unquestionable relief.

(3) *The Pollen Type.* It has been my experience in this type that I have had such universally good results from the pollen extract in desensitizing this type of patient that I have not had the opportunity of using the ray. However, in the hands of other observers the reports have been most gratifying. The type of pollen asthma and pollen sensitivity that continues with cough and tenaceous expectoration for weeks after the season is over, can be helped and cured by the use of the rays.

(4) *The Animal Epidermal and Food Protein Types.* Here the epidermal extract and the removal of foods causing reaction produce a cure, but in exaggerated cases where there is a definite bacterial type of asthma engrafted on the above mentioned type the use of the rays is of great benefit.

(4) *The Bacterial Type.* In this type it has been my experience that the ray plays its greatest role, being used in connection with the bacterin and toxin and filtrate therapy. I have used the light in all cases of bacterial sensitivity with the greatest benefit, as the following table will show. It has become a routine in my clinic and office practice that if a patient does not clear up or show signs of improvement following three or four weeks of bacterin therapy, exposure to the rays is immediately instituted.

(6) Asthma due to mediastinal growths is not benefited by the use of the ray, and is as a matter of fact, a hopeless case. Definite benefit has been derived from the use of the ray, however, in cases of enlarged mediastinal glands, especially in children, and ultimate cures have been experienced in some instances.

(7) Asthma due to definite fibrotic changes in the lungs has been greatly benefited, although a cure has not been experienced. The sputum has been more easily expectorated following exposure, and definite relief is derived in the acute attack.

(8) Asthma due to periodic cardiac decompensation is greatly relieved by the use of the ray; the circulation is re-established and the dyspnea relieved more quickly.

In conclusion—The technique for application of the rays in all these types is the same. This table of dosage is not an arbitrary one and will vary somewhat with each individual burner.

INFRA RED RAY

Reaction stimulative.

Skin Distance	*Time of Treatment*
30 inches	10 minutes 1st day
30 inches	20 minutes 2nd day
20 inches	15 minutes 3rd day

20 inches	20 minutes 4th day
18 inches	20 minutes 5th day
18 inches	15 minutes 6th day

The above treatment to be one to two days apart, according to reaction.

ULTRA VIOLET RAY

Reaction stimulative.

Skin Distance	*Time of Treatment*
30 inches	1 minute 1st day
30 inches	2 minutes 2nd day
30 inches	3 minutes 3rd day
30 inches	4 minutes 4th day
30 inches	5 minutes 5th day
25 inches	5 minutes 6th day
25 inches	6 minutes 7th day
25 inches	7 minutes 8th day
25 inches	8 minutes 9th day
25 inches	9 minutes 10th day
20 inches	10 minutes 11th day
20 inches	12 minutes 12th day
20 inches	14 minutes 13th day
20 inches	15 minutes 14th day

If during the course of these treatments a patient shows extreme sensitivity the distance is increased and the length of time of exposure is decreased.

I feel that the benefit derived from the rays is due, certainly in part, to the action of the infra red rays and their ability to enhance hyperemia, thereby signifying a more copious blood supply; increased phagocytosis and increasing the oxygen carrying capacity of the blood stream, and general metabolism is increased to a marked degree. Heat is also produced in the tissues themselves and heat is atomic motion, the result being the highest type of cellular massage. Then followed with the ultra violet ray by virtue of its action on the nervous system, as well as its stimulating effect on the phosphorous content of the blood, and its bactericidal action certainly proves a valuable adjunct in the treatment of this disease.

As to the calcium content of the blood, a word here may not be amiss. It has not been my experience to find the low blood calcium that has been reported by others, as we have made blood calcium estimation in 200 cases, using the Clark-Callip method, and have only seen six low blood calcium with sixteen high blood calciums. Nevertheless, this observation does not change my opinion that the ray has a decided place in the treatment of asthma, but is due to the reason stated above and not to the stabiiization of the blood calcium.

In conclusion:—

1. The infra red and ultra violet rays should be used in all cases of bacterial sensitivity, as an adjunct to bacterin therapy.

2. In all children with asthma, no matter what the cause, who are definitely anemic and show evidence of rachitis.

3. In all patients whose living conditions are poor with no opportunity of sunlight.

4. In adults with a dry cough and with extremely tenaceous fibrous sputum.

Children from 2 to 10 Years of Age

No. of Patients.	Relieved.	Improved.	Unimproved.
20	14	3	3

Young Adults from 10 to 21 Years

No. of Patients.	Relieved.	Improved.	Unimproved.
12	6	2	4

Adults from 21 Years to 72 Years

No. of Patients.	Relieved.	Improved.	Unimproved.
50	30	8	19

This table indicates the number of patients treated, and the column designated as relieved means that those patients who had hitherto been suffering continuously with asthma, have been asthma free for over six months.

It might also be stated that the majority of these patients had been treated from many angles with little success until the ray was used.

THE TREATMENT OF CARBUNCLES*

C. L. HUSTEAD, M. D.
FALLS CITY, NEBR.

In presenting this paper I wish to say the subject was chosen for the reason that in many instances carbuncles do not receive the proper care and many physicians look upon them much too lightly, regarding them in many instances as only a local condition and with little concern. My observation of this malady is different. A carbuncle is a serious infection as can be noted by the high mortality rate as seen in improperly treated or neglected cases, especially in the aged or asthentic patients. The subject of my paper being "Treatment of Carbuncles", the discussion of the symptoms, complications and pathology will be largely omitted as I believe that we here are interested in the newer and more approved methods of treatment rather than of pathology. I have confined my paper to direct treatment of carbuncles emphasizing the fact that in all cases the general care such as elimination, tonics, supportative treatment, etc., are very important.

Carbuncles being an acute infection, treatment should be directed as will best meet the particular stage of its inflammation. In the first stage of carbuncle there is local tenderness and subcutaneous induration usually with constitutional disturbance and if the patient is asthentic the more marked are the general symptoms, therefore, I wish to state again that general supportative treatment should be instituted at the onset. During the beginning stage of carbuncle, well directed treatment will in many cases prove to be abortive treatment. It is at this time that radiant heat and the ultra violet ray produce good results. The technique I use is as follows: The carbuncle and a good wide margin beyond it is exposed to treatment with the radiant heat lamp, the other part of the body being covered by towels. The light is started at about a twenty-four inch distance and every few minutes is lowered an inch or two until the patient complains of the heat at which point it is held for one and a half hours, an occasional stroking with gauze serves to relieve the patient of the sensation of the heat. Following the application of the radiant heat, the ultra violet ray is applied with the water cooled lamp under compression for one or two minutes after which a sterile dressing is applied. This treatment is applied daily and it is my experience that about the fifth day the usual case will be on a reparative rather than a destructive course.

Often the patient does not present himself in time to gain advantage of this type of abortive treatment and we see then a carbuncle beginning its course in the second stage with more pronounced local symptoms, with firm dense infiltration of the deeper skin and subcutaneous tissue. The overlying skin showing a reddish tinge and the carbuncles may vary in size. When seen in this stage the radiant heat lamp is used as in the abortive type of treatment and the ultra violet ray from the air cooled lamp each day increasing the dosage as rapidly as the reaction of the skin will allow using in conjunction the x ray in divided doses with the following setting: SG. 7", 2 ma., sole leather filter, 1 mm. of al. filter, 10" distance, 3 minutes each day for a period of ten days. X ray in con junction with the light treatments will in practically all cases in the second stage of carbuncles bring a more speedy cure than surgery, gives a far superior cosmetic result and is preferred by patients familiar with both methods.

I do not believe that surgery plays any part in the treatment of carbuncles up to this stage of the infection. Following the second stage of the infection suppuration and softening oc-

*Read at X Ray and Physical Therapy Meeting, Kansas City, August 29, 1927.

curs, the skin at one or more places breaks down giving exit to a sanious pus, sloughing is seen around these openings which gradually become larger and the necrotic tissue and pus is cast off with the dressings. If the patient has had x ray, the cavities show granulations and the patient's general condition is good, sterile dressings moistened with Dakin's solution are usually sufficient for complete healing. In other cases, as soon as the skin has broken through at several or many places a sloughing of the whole mass ensues and in exceptional instances goes much more deeply. This formation is painful, often of a dull and lancinating character and the area may be extensive. Cases of this nature are occasionally seen following the older type of treatment. Constitutional symptoms are grave, particularly in the aged, septic poisoning occurs and the patient may succumb. In this type of case, except in instances where the carbuncle involves the face and certain areas of the head I believe that surgery has its place, by clean excision of the whole sloughing mass preferably by the electric cautery. There are a few good methods of treatment of this type of case, one of which is the electric cautery, penetrating the various pockets of the carbuncle underlying the skin, searching carefully the whole carbuncle. In my practice the following method has been used lately with good results: The carbuncle being excised by first penetrating the skin with a sharp scalpel beyond the margin of skin necrosis, the balance of the carbuncle and slough being removed by the electric cautery. The wound being treated daily by the radiant heat lamp using a spong to absorb the serum as it appears in the wound and the application of sterile dressings moistened with Dakin's solution, protecting the healthy skin with plain vaseline. The patient is usually greatful for the treatment as it affords him considerable relief from his pain and improves his general condition. If the wound it not too large it will heal kindly and quickly. So far I have done no skin grafting but on two occasions have treated the resulting scar with the x ray to soften it down. One exception to the above treatment for carbuncle in the second stage is sometimes necessary in patients with severe diabetes in which there is a constant hyperglycemia and a glycosuria which is not influenced by diet and insulin. In patients of this kind it is my practice, excepting carbuncles which would greatly disfigure the face to excise them immediately. The necessity of which is due to the fact that in a large majority of patients with diabetes bordering on an acidocis with severe infection of this type show no reaction to even large doses of insulin and it is necessary to excise the sloughing necrotic tissues to prevent absorption in order to reduce the hyperglycemia and the acidosis.

Case Reports

Patient, Case no. 1, age 60, farmer by occupation, presented himself with a carbuncle on the dorsal region with a sloughing skin area of 10 x12.5 cm., the induration extending beyond this area undermining the skin for a considerable distance by involving the deep structures and fascia of the back. This patient had a blood sugar running 300 mg. to the cc of blood and a beginning acidosis. The first twenty-four hour observation following the administration of 70 units of insulin and a 1400 caloric diet with P. 50, F. 125, Ch. 30 showed no reduction either in his blood sugar or his symptoms of acidosis, his temperature running 103½ and pulse 130. The following day, on account of the extreme pain and his general condition, the carbuncle was excised under primary chloroform anaesthesia beyond the margin of the sloughing skin area by the scalpel through the skin and the balance of the tissue by the electric cautery. The wound was dressed locally as in other carbuncles and the patient made a nice recovery from his acidosis and hyperglycemia. The wound healed quickly and without skin grafting. This patient, however, was treated for diabetes rather than for his carbuncle and I present this case only to show the exception in the general treatment.

Patient, Case No. 2, age 38, merchant by occupation, presented himself with a carbuncle on the back of his neck at the end of about the first stage. Temperature 102, pulse 100. Patient stated he was unable to eat and unable to sleep on account of the severe pain and suffering which he was experiencing. The muscles of his neck developed an acute myositis and he was unable to turn or move his head in either direction. His previous treatment consisted in the application of iodine and Denver mud. I gave this patient two hours of the radiant heat covering the head with a cap to prevent burning of the hair and treated the entire neck and upper dorsal region. Following the radiant heat he was given two minutes ultra violet ray with water cooled lamp under compression. This treatment continued daily and the patient was dismissed on the seventh day free from pain and practically free from all swelling. He continued his treatments at home with sterile moist dressings and returned to his work on the tenth day. The x ray was not used.

Discussion

Dr. Walke (Shreveport, La.): I enjoyed the doctor's paper very much, first because it was his own experience. Usually we say what might or could be done or this method or that method has been tried by this individual and discarded by another, but this came truly from the doctor's own experience.

Personally I have pursued the same line of treatment of carbuncles and find it extremely satisfactory, only I substitute infra red for the radiant light because I found it more penetrating in those particular cases. When you have carbuncle present of course the routine examination is made, urinalysis and blood sugar, if he has no blood sugar then proceed to build up the patient's calcium fixation with ultra violet. If there is any sugar for goodness sake don't use ultra violet, because you will throw your patient in coma almost surely.

In those cases Doctor speaks about where insulin does not handle it I have been in the habit of using 500 c.c. of glucose solution intravenously, then giving insulin 15 minutes after. If you give just insulin alone probably it won't have any effect, but by adding fuel to the flame and giving your patient a large dose of insulin you will find the blood sugar and urine sugar will drop considerably. Ordinarily I treat about forty-five minutes with infra red, if they show no sugar I give heat radiations with ultra violet to build up their tolerance, treating them daily to build up calcium deficiency, because I believe in carbuncles calcium deficiency plays a part. In fact, in the ordinary series of boils I am positive there is calcium deficiency and treating of that can be done better by ultra violet than any other way. Then after the carbuncle has broken down, as Dr. Hustead says, if it shows a small head pointing you can use a little scalpel while the wound is hot or the area is red; just stick it with a light pressure and the relief is almost instant. A few drops of blood or pus may come along with it and it will give the patient great relief. Then cover the area two or three inches around the wound and go down eight to ten inches with ultra violet; give it forty seconds at about 12 inch distance and the treatment will be almost without pain.

I have no x ray but I see no need of it because with infra red or ultra violet I can control most cases. When one has been excised before it comes to you and the old crucial incision made, use ultra violet and they will start granulating. Since I have been using it I have never dissected any carbuncles, it hasn't been necessary. I wouldn't hesitate to use it on any case I have.

I think this paper is extremely timely; we know how much suffering the patient goes through.

Dr. Morian (Denver): I enjoyed the doctor's paper very much. Speaking of using ultra violet in diabetic cases, I want to mention one case where it proved fatal. A colleague put in ultra violet, not knowing the technic. A young lady who had diabetes came into the office one day and he gave her a heavy treatment and in three days she went to the Happy Beyond.

The technic Dr. Walke refers to I have followed. Two or three weeks ago I learned from one of our doctors who is very much interested in physical therapy still another method in which he uses the positive galvanic pole with the metal inserted into the tumor itself. That is, before real pus began to form and he claimed that by giving a good dosage of positive galvanism he could abort the carbuncle in that way. Of course, after pus has formed we have to incise it and follow out the other treatment.

Dr. L. F. Quantius (McPherson, Kas.): I would like to ask one question—first I will tell the Doctor my view on the proposition. He says he uses a radiant heat lamp an hour and a half and frequently he

passes his hand or a sponge between the light and the lesion in order to make the patient comfortable.

Now, as a matter of fact, we know that it takes eight minutes to penetrate with a 1500 watt lamp a 150 pound body and we know if we stop to reason that each time we pass our hand between the patient and the light we cut off that penetration and start over again, and you can pass your hand under the lamp a time or two and your patient is so uncomfortable after that from heat that he can hardly tolerate it. I would criticize that part of the doctor's technic.

I want the doctor to know that I appreciate his paper but I do think that is a matter for criticism.

We know the deep therapy lamp produces a leucocytosis in a few minutes but if it continues it produces leucopenia. I can't see the use of this long treatment unless it is the heat you are after and if it is heat you can get it with the hot water bottle. But if it is the therapeutic standpoint you kill your first physiological effect by the long exposure with the lamp.

Dr. Margo (Oklahoma City): Dr. Wilmoth of Louisville uses electrocoagulation with very fine results. I have talked with him on this subject and he can quote a dozen cases. His technic consists of using electricoagulation. He places a circle where the erythema ends and thereby brings about cauterization. The whole thing sloughs off and leaves good granulation. After that he uses infra red.

Dr. Hustead: The failures we have had in treating with radiant heat are due to the fact that we have been told that the time for application of radiant heat is from ten to thirty minutes. In my opinion, you get no results in anything less than one hour, and two hours are better. Dr. Quantais' statement that it takes a 1500-watt lamp eight minutes to penetrate a body weighing 150 pounds, I believe is unfounded. As a matter of fact, the penetration is not deep, it will go through to the subcutaneous tissues and in addiion produces an extreme hyperaemia. The method I use in stroking with the hand does not interfere with the heat, but it does relieve the sensation of heat to the patient. You can stroke the part treated and keep the light at the same distance and the patient will tolerate the heat. I agree with the Doctor that the effect we get from a 1500-watt bulb is heat. I do not believe there is any therapeutic action from the violet ray from the bulb, so far as the carbuncle is concerned and the good effect produced is from the heat if left on an hour or more. If you do not have the time for an hour, do not use it.

It is reported by certain scientific tests that radiant light contains about 7 or 8 per cent ultra violet light. I do not believe it is the actinic ray you get your benefit from. I do believe if you use radiant light for an hour and a half instead of infra red for forty minutes clinically you will get as good or better results caused by the length of time the light remains on.

Answering Dr. Margo's statement relative to the technic of Dr. Wilmoth in using electrocoagulation and the curette, does not appeal to me, especially so when we consider the histo-pathology of the carbuncle and the surrounding tissue. There is marked cloudy swelling of the cells, there is interstitial inflammation, the lymphatics are swollen and congested. As a matter of fact, there is a general parenchynatous inflammation of the whole surrounding tissue extending out for some distance. The blood vessels being involved and many of them occluded by organized clots. Surgical coagulation in tissue of this nature followed by the curette is, in my mind, a dangerous thing to do as there is danger of loosening the clots in the blood vessels producing emboli which might be disastrous to the patient. I have never been inclined to lean toward the surgical coagulation of carbuncles any more than I have been inclined to the surgical coagulation of tonsils. If necrosis is present sufficiently for its removal, I believe the electric cautery is ideal because you can remove the carbuncle or the necrosis in three or four minutes and have a nice clean surface which nature has a chance to aid, and I would like to emphasize particularly the use of the deep therapy light post operative.

PALLIATIVE TREATMENT OF INOPERABLE CARCINOMA*

JOSEPH K. NARAT, M. D.
CHICAGO

When in his misery the patient with cancer is driven, at last, to seek advice, the disease has in the large majority of cases reached a hopeless stage. This is due to lack of lay education —one of the main factors in the crusade against cancer.

There is no question of advisability of the spread of education in this important matter, even at the risk of disturbing the mental equilibrium of some nervous people. To accomplish this, substitution of accurate knowledge for gross ignorance by means of public lectures is essential.

At present a great number of cases coming under observation are inoperable, due either to the size or location of the neoplasm or to some complicating systemic ailments such as nephritis, diabetes, cardiovascular and other conditions. In regard to these cases a fatalistic point of view prevails among the medical profession. Usually the physician limits his activity to prescribing narcotics or referring the unfortunate patient to a radiotherapist.

And yet the prevailing pessimism is not justified as many palliative methods are able to relieve the most distressing symptoms, such as pain, discharge, foetor, etc.

Tumor masses of accessible inoperable cancer should not be left untreated because the products of their abnormal metabolism are the main cause of cachexia. The toxic action of products absorbed from degenerating and ulcerating areas so frequently encountered in superficial malignancies is still more harmful, as the secondary infection contributes to lowering of the general resistance of the cancer carrier. Therefore where a complete eradication of the tumor cannot be accomplished, as nearly a complete removal of the cancer as possible should be attempted.

Excision with knife is extremely dangerous in such cases as implantation of cancerous cells is facilitated by surgical manipulations.

It is superfluous to assert that operative surgery still provides the best available means of treatment in the majority of cases in which the stage of the disease is not too far advanced. Nevertheless, even its most determined advocates will not claim that this method should be used where a complete removal is impracticable.

Actual cautery with soldering iron is one of the most valuable methods for removal of cancerous masses. A disadvantage of this agent is that the plugging of the bloodvessels is not very firm and a secondary hemorrhage may occur. Frequently such hemorrhages are extremely difficult to check.

Electrocautery has the same disadvantages.

X ray and radium are of little value in this type of cases, as the produced effects are not immediate; few weeks elapse before the destruction of tumor masses can be seen. In addition to it x rays are not applicable in cases which are confined to bed and cannot be hospitalized or treated in the office. Furthermore, application of x ray or radium usually involves considerable expense which the family of the patient may not be inclined to carry, particularly if the case has reached a hopeless stage.

The beneficial action of various arsenic pastes is counterbalanced by the danger of poisoning from the absorption of arsenic.

Among the liquid caustics chromic acid has to be mentioned; it inflicts little pain and checks

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to a certain extent the excessive growth of cancerous tissues.

In the last few years a growing interest is being shown in the application of electrothermic effects produced by high frequency current. Surgical diathermy proved to be a very efficacious agency in the treatment of accessible inoperable neoplasms.

The sealed blood and lymph channels guard against induction of metastases. Even in advanced, hopeless cases formation of metastases is undesirable because they may be source of great pain and impair the function of the involved organ and thus shorten the life of the patient. Surgical diathermy sterilizes the zone of potential invasion about the original site of the tumor and decreases the possibility of dissemination of malignant cells. The degree of destruction and the depth of penetration of the electrothermic energy can be regulated with great exactness. Haemostasis is secured easily, as the bleeding vessels are sealed with the electrode. No suturing is required.

The heat converts the neoplasm into a block of dead tissue which can be removed easily with a dull curette. Thus it is possible to reduce the growth by removing with great accuracy as much of the malignant tissues as the conditions allow.

Of course the fatal outcome is unavoidable, but retardation of the rapid growth prolongs the life and makes it more comfortable. The amelioration of the general condition of the patient is sometimes surprising.

One of the greatest problems in the palliation of cancer is the relief from pain. Here again surgical diathermy renders good services. Application of high frequency current is very beneficial in this respect as sensory nerves are seared off. The use of narcotics can be limited and spared for the latest stages of the disease where the prospective span of life is short.

The foetor is frequently one of the most annoying symptoms of cancer, especially where friable, decaying masses are present. In the control of foetor excellent results may be obtained from the local application of granulated sugar. Powdered coal of animal origin also has beneficial results; however, it is unsightly and difficult to remove. For the same purpose two other substances have been used as a dusting powder with gratifying results: permanganate of potassium and resorcin. All these chemicals have certain disadvantages. The limited time does not permit discussion of this subject. An ideal dusting powder for local treatment of cancer must have the following properties:

1. Absorbent.
2. Deodorant.
3. Astringent.
4. Antiseptic.

Through courtesy of Mr. E. H. Volwiler, the chief chemist of Abbott's Laboratories, I secured a powder which, following my suggestions, possesses the above mentioned properties in a higher degree than any other known chemical substance. The powder consists of benzoyl peroxide, aluminum stearate and bentonite.

None of the above mentioned chemicals can give gratifying results where large decaying masses are present. The best method to dispose of these masses is surgical diathermy which permits the removal of malignant tissues with great delicacy and promptness. The after treatment consists of daily applications of the above mentioned powder.

The control of foetor immensely improves the color, appearance and the general health of the patient and exerts beneficial action upon the psychic condition of the cancer carrier and his family.

It is superfluous to make assertion that none of the above mentioned methods of treatment of inoperable tumors will cure a cancer, but the

conclusion is justified that the electrothermic method must be regarded as an outstanding development in this field. Surgical diathermy retards the rapid growth, helps to prevent formation of metastases, relieves pain and foetor faster and better than any other method of palliation of cancer.

1200 N. Ashland Ave.

THE BENEFIT OF PHYSICAL THERAPY IN GENERAL PRACTICE*

FRANCE L. LAFFOON, M. D.
KANSAS CITY, MISSOURI

I am going to give, in this short article, a few of the uses that I have made of physiotherapy in general practice.

Physiotherapy comprises all of the physical remedies that may be used in the treatment of disease other than drugs. These remedies may be classed under four general heads: Thermal, Chemical, Mechanical and Electronic.

Thermal remedies may be applied in three forms. Conductive heat is when heat is applied to the body by contact of a heated substance, as poultice, hot water bottle or water bath. Convective heat is a form of heat that is thrown on the body from an outside source such as radiant heat lamps, hot drafts of air, etc. Conversive heat is a form of heat generated within the tissues.

Chemical remedies include galvanism and the general or constitutional effect of ultra violet.

Mechanical means of treatment would include massage, exercise, active and passive, some static modalities, slow or interrupted galvanism and the slow sine wave or alternating current.

The electronic modalities are such as static electricity when considering the minute cell activity produced.

I will now try to show wherein I use these modalities in the treatment of disease, by reciting a few case reports from my files. Heat is usually taken from the radiant heat lamp or produced by the use of the high frequency current in treating arthritis, acute or chronic.

Such as in case report of Mrs. A., age 40, past history negative except for being slightly over weight. Arthritis of both knees and other smaller joints for over one year, gradually getting worse, with much pain on motion. Greatly improved after the 4th treatment of diathermy to knee joints and general body radiation of the long wave length technique of ultra violet light with short wave technique of 12 in. over the knee joints.

Osteomyelitis has long been one of the dreads of the general practitioner who generally passed them on to the surgeon. Case Mrs. G., 48 years old, general health good, osteomyelitis of process extending up into antrium on R. side, tooth was removed and treated by dentist several weeks without results. This completely cleared up after the 9th treatment of ultra violet in the tooth canal from the water-cooled lamp and general body tonic radiations of air-cooled lamp. Another condition that has caused us much worry with medical treatment alone is a chronic bursitis which clears up very quickly under a few treatments of diathermy and general radiations of ultra violet. Always removing any focal infections if any be found. In the case of Mrs. S., nurse, age 34, nothing out of ordinary in family history or a physical examination but acute bursitis of shoulder which pre-

*Read at X Ray and Physical Therapy Meeting, Kansas City, August 30, 1927.

vented her from even dressing herself. This patient was seen by 3 other reputable physicians without any relief. I had a small infra red lamp placed at her bedside which she used 3 or 4 times a day for two days. She was taking salisylates to tolerance at the same time. She came to the office for the rest of that wonderful treatment she had heard so much about, with scepticism still hovering about her. After the fourth diathermy treatment of the shoulder and general body ultra violet she returned to work on a case of a chronic invalid, she was compelled to give up ten days before. She was discharged after the 6th treatment cured, and has remained so since last February.

Case, Mrs. B. 71 years old, lived on farm, no history out of ordinary except had been suffering from a chronic bursitis of three or four years standing which had resisted all medical and home treatments. She was not able to use right arm at all when she came in to the office. It took her two days of rest after driving 40 miles before she was able to come into the office. After the first treatment she was able to dress herself. It took considerable coaxing on the part of my technician to get her stripped for the general body radiation of ultra violet. After the fourth treatment of diathermy and ultra violet she was completely restored to normal function.

In the case of Miss S., age 18, with nothing of importance in history except for having had hay fever for the past five years. I gave her a few treatments in the nose with the water cooled ultra violet light which has given her complete relief since, until a few weeks ago her left wrist began bothering her so she could not use the typewriter. I found an acute bursitis of the usual place on the left wrist. This cleared up and has given no further trouble after three or four treatments of diathermy through the wrist.

Case, F, age 42, Railway Mail Clerk, came in with bursitis of his right shoulder so that he could no longer rack his mail or dress himself. He completely recovered after 4 treatments of diathermy of joint.

The liability companies have recently seen the light. They no longer have the wholesale loss of the hands, arms, legs or fingers and toes from apparently minor industrial injuries, which were always infected. Case of Mr. S., age 21, fell off scaffold, fractured head of radius and badly lacerated hand. Fracture put up in flexion. After arm was taken out of fixation extension was only 50%. After six diathermy treatments of the joint the function has increased to 90%.

Case, Mr. W. S., age 43. Fracture of right radius one inch above wrist joint. Infra red ray was used after the second day. Diathermy began on the 25 day. Function was completely restored ofter the tenth treatment.

In the case of Mr. S., age 26, mashed toe, fracturing the distal phalanx. This was dressed several days after using ultra violet each day and put back in plaster splint. Infra red light was used daily after the sixth day. This man was restored to normal with complete function of toe after 60 days. These are cases that were very stubborn to do anything with, the old line of treatment of "watchful waiting and iodine."

Case of Mrs. K., age 39. House wife fractured lower end of radius of left arm. Usual procedure of a fracture followed by diathermy to restore function in a few treatments. We never see any of these old silver fork wrists that last for many months when we use physiotherapy in our fracture of the wrist.

Case of Mc., male, age 24. Injured tendons of arms by heavy lifting; cleared up completely after third treatment of infra red light.

Case of Mc., male, age 21. Sprained ankle very badly in automobile accident. Was brought to the office, given 30 minute diathermy of the ankle. After the third treatment he was able

to be on the foot about work as usual. I have many cases that I could report of infected wounds that cleared up like magic under treatment of ultra violet with very rarely any need of drainage.

We have those cases that do not get well. Often what they call a light attack of grippe. I will mention a few cases of this type to show how quickly they respond to treatment. Case of Miss M., age 23. House wife, convelescing from grippe with bronchitis and a pleural effusion on one side. She was completely cured after five treatments of infra red light on chest, thirty minute treatment, fifteen minutes anterior and 15 minutes posterior, followed by increasing doses of general body ultra violet.

Case of Mrs. H., age 42. Father and one sister died of tuberculosis. Mother had many chest infections, was called asthma and recently died of pneumonia at 76 years of age. You can see what this patient had before her when she had a purulent bronchitis following grippe that has lasted for three months with no signs of letting up. She has recently had some asthmatic symptoms. She was given thirteen treatments of infra red light followed by general body ultra violet in increasing doses and made a complete recovery.

You also have many cases of sinus infections following these grippe cases that don't seem to be of a surgical nature that cause your patients quite a bit of pain and worry. They don't seem to get well. Case of Mr. L. Both frontal sinuses infected, had been under treatment by local physician. Came to me very tender over both frontal regions. I shrunk the nose down with a solution of cocaine and antipyrine, applied water cooled ultra violet and gave general body ultra violet and gave infra red light 30 minutes over the sinuses and this man got relief after the first treatment and needed no more treatments after the fourth treatment.

Case of Mrs. Mc., age 28. Had a frontal sinus infection following a "cold." She was cured of her pain and discharging nose after the fourth treatment just the same as the above mentioned.

Case of Mr. S., age 39. Grocer, frontal sinus with purulent discharge from nose, seven treatments of the above description completely cleared his trouble up.

We are greatly pleased with our results with ultra violet in the most serious malady that our people are suffering from today, that of tuberculosis. Since the ages many thousands of years B. C. we find in history where man took sun baths to combat this disease. In modern days we have such men as Rollier, with his work so beautifully described by Edgar Mayer in his recent work on clinical application of Sunlight. I have a few cases I will hurriedly run through. Case of Miss K., age 20. Lost 30 pounds in weight in three months. Night sweats, coughed quite a bit. Chest findings quite typical. Ultra violet begun in very small doses. Very gradually increased with rest in bed and forced feeding, completely quieted all symptoms at the end of the third month; patient was discharged as cured at the end of the fourth month, with advice to go to a high, dry climate, which she did and has been free from all symptoms since.

Case of D., male, age 32. Developed cough, came in complaining of night sweats, loss of weight, moist rales in both apices. He was given fractional doses of ultra violet for twenty-five treatments with the abatement of all symptoms for 2 years.

Case of Mrs. S. Colored, married. Loss of weight and all the other classical symptoms of tuberculosis. She was pronounced cured after thirty ultra violet treatments. She has been through her treatments for over three months and has changed from a thin, emaciated person to a nice, plump, happy person 25 pounds heavier.

Case of Mrs. T. Widow, 35 years old, two children, works in garment factory. Two sisters

and two brothers died of tuberculosis. Physical examination revealed a flat chest with poor expansion, left side dull, moist rales over entire chest, afternoon temperature. She showed signs of improvement under ultra violet treatment and all symptoms cleared up by the forty-second treatment. She has never quit work. In all these cases I took the liberty to use the zoalight for the pain in the chest. None of these patients had had a hemmorrhage. I feel that I have been a benefit to these patients, that I never did or ever expect to do with the old line of medical treatment alone.

Ultra violet light has made its place in the otologists office equipment. It is most indispensable in the treatment of otitis externa. The best way to impress you with the benefits from this type of treatment will be to cite a few case records from my files. Case of Miss B., nurse, age 45. Has been having otitis of external canal for two years. Opened abscesses that were not draining, irrigated canal and wiped dry. Applied ultra violet into canal with small ear electrode for two minute treatments. This was supplemented by general body radiation and was cured after eleven treatments, not to return in nine months.

Case of Mss J., 25 years old. Acute otitis externa cleared up after one treatment of ultra violet in ear with no return of infection.

Case of Mc., female, 62 years old. Chronic otitis externa with discharge from both ears for many weeks. Oedema was obstructing canal to extent of nearly complete deafness. Wiped out canal with dry cotton and applied water cooled ultra violet for two minutes. After canal cleared up she proved to have a chronic otitis media on one side which was cleared up after ten radiations of the ear and post nasal space.

Case of P., male, 25 years old. Baker; had multiple recurrent ferunculosis on face and neck. This was completely controlled after ten treatments of general body and local ultra violet.

Burns are quickly and painlessly treated with ultra violet. Case of Mrs. H., age 48. Burned back of fingers in mangle. This was a very deep burn. This completely healed without scarring or deformity after seven treatments of zoalite followed by water cooled ultra violet.

I ray all of my injury wounds and have proved to my satisfaction that there is less liability and less loss of time from work. I find that these so-called dirty infected wounds heal with first intention in many cases when well radiated with ultra violet before suturing or dressing.

The dermatologist has been enjoying the benefits of physical therapy for several years. Miss I. P., age 20, called me in to see what could be done for her. She was suffering from a weeping eczema due to food alergy from fresh fruit, in this case which had been erroneously treated for ivy poisoning by Rus Tox serum, this had produced a general dermatosis which had confined her in a hospital for seven weeks. When taken home with this general dermatosis she was unable to wear a stitch of clothing and there was so much weeping that her sheets were changed every hour. I gave her seven general body radiations with the air cooled ultra violet, fifteen minutes anteriorly and fifteen minutes posteriorly, augmenting the water cooled ultra violet in axilla, groin, popliteal spaces and perineum, where the dermatitis was much worse. Her skin was dry after the first treatment and she returned to work on the fourth day and all cured after her seventh treatment. She took no opiates or bromides after the first treatment.

Case Mc., age 23, female. Best of health except for eczema of feet and hands which was completely cured after the second treatment of large doses of ultra violet, both local and general.

Case of Mrs. K., age 60. Eczema of hands and feet extending nearly to knees and elbows

was relieved after the third dose of ultra violet local and general body.

Case of Mrs. J., age 20. Seborrheic dermatitis of entire body and upper extremities cleared up after the fourth treatment of ultra violet.

Mrs. H., age 35, widow. Seborrheic eczema on chest cleared up after five ultra violet treatments.

Case of Mrs. C., age 67. Pruritis ani with fissures and piles. The last two maladies received surgical attention which did not relieve the pruritis. This was completely cured after the tenth ultra violet treatment.

There is nothing that responds to ultra violet any quicker than acute tonsillitis. I use a right angle solid quartz pharyngeal applicator, being careful not to treat or expose any of the throat except the tonsils. I treat them under contact with applicator, two minute exposures. Seldom more than one treatment is required. The pain is quickly relieved.

Vincent's Angina in fifteen year old girl's throat and gums cleared up after first treatment. In these infected cervical glands I find that these children need not more than three treatments for a recovery. If glands are very large and greatly indurated I use thirty minute diathermy through and through the neck, followed by ultra violet.

My patients are becoming trained to come in just as soon as they find they have poison ivy. Cases are too numerous to mention but they usually clear up following the first treatment of the involved area.

I have had some good results on a few cases of pyorrhea. In treating these cases the applicator must be in contact with the quartz window of your burner and the gums must be dehematized from pressure of the applicator. You must produce a third or fourth degree erythema to get results. You can only treat a few teeth at one sitting as your reaction will cause some discomfort to the patient in eating.

I have had several nice results in hay fever. I have had some that were not so nice with ultra violet. I feel that the heavier I applied the ultra violet the better were my results.

I have not said much for diathermy. I have a case of Mr. M., age 48. Simple catarrhal cholecystitis, that cleared up nicely by using diathermy to gall-bladder. He took only seven treatments. Case of Mr. H., 31 years old. cleared up all symptoms of cholecystitis after three treatments.

I have treated a number of cases of lumbar myalgia with complete recovery in all but a few instances.

I have had but two cases of diabetes to treat by diathermy of the pancreas. The glycosuria promptly cleared up after the second and third treatments.

Gynecology is a very lucrative field to neglect in physiotherapy. These cases of combined cystitis and endometritis or endocervicitis get quick relief from general body and local ultra violet. I many times use diathermy or infra red light in these pelvic inflammations.

Last but not least is our gastro-intestinal work treated by one of the low volt currents or the so-called sine wave or alternating currents. I have a few cases I would like to report to show pictures of the position of the colons when starting the treatment. Mrs. R., age 37, nurse. Had a very pronounced prolapsed colon lying in the pelvis. Constipation was her chief trouble. She felt very badly most of the time unless she had taken a heavy cathartic each day. I gave her progressive doses of ultra violet and followed with tolerance of sine wave current over abdomen and she showed marked improvement of her constipation and felt better generally.

Case of Mrs. B, age 40. Suffering from melancholia. X ray showed the same type of

colon. This case took some thirty treatments with marked improvement in all symptoms from the first. She is now doing her own work which she had previously been unable to do.

Mrs. B., age 50. The same type of case feels very badly most of the time. X ray showed her transverse colon down on floor of pelvis. She has been much improved and is still taking treatments.

Case Bl., age 62, tinner by trade. Retired from active work for two years due to bad health. Colon much prolapsed; began ultra violet and sine wave treatments. He would go ten days at a time without a stool. By the time he had completed his fifth treatment he had returned to work. He only took seven treatments.

I have one more case that I would like to report. Married, age 37. Secondary anemia due to metrorrhagia which has lasted for several months. Examination revealed large firm freely moveable uterus. She resisted all medical treatment to control hemorrhage. She was given positive galvanism within the uterus. General body ultra violet for thirty treatments. Her bleeding was completely controlled after the third galvanic treatment. She also got general body ultra violet radiation which built her blood to normal. She is still normal over a period of six months. The uterus has greatly diminished in size.

These are only a few cases picked from my files. I have only covered a small part of the field.

Discussion

Dr. Bigley (St. Clair, Missouri): I would like to have the Doctor give his technic in traumatic conditions so they can be treated either air-cooled or water-cooled.

Dr. Walke: I certainly have enjoyed Dr. Laffoon's paper to the utmost for the reason that physical therapy is near my own heart. Where it is used where it is indicated there is nothing better in the world than physical therapy because the results are positive, and quick. For that reason physical therapy is not on the defensive any longer, but it has taken its place as one of the tried medical subjects. Dr. Laffoon's cases run just about like mine and I can testify he has told the truth, the whole truth and nothing but the truth, when he told you what he has done. We put in the equipment three years ago. Fortunately I have a very competent technician to help me in the work. The first year we gave a little over 4,600 treatments; we didn't go at it blindly and I think ninety per cent of the cases we were largely successful in. But you must know your machine, whatever you are handling; you must know your diagnosis; you must know your dosage and treatment just the same as you must know the physiological action of drugs. Where you can use electricity many times you will get better results than with medicine, but don't forget you are still doctors. Physical therapy isn't a cure-all but it works agreeably along with other medical agents.

Dr. Liston Alden: I enjoyed the Doctor's paper immensely. He duplicates a whole lot of my experiences—I suppose that is why I enjoyed it so much. He spoke about a case of weeping eczema where he applied ultra violet light front and back fifteen minutes and wound up by saying you can't hurt them. I would like to hear the Doctor expand a little bit on those statements.

Dr. Laffoon: In this paper I only took up cases in a general way, leaving out most of the technic and rushed through. I would have had you all asleep if I had gone into technic on each individual case.

Our technic on traumatic cases and infected wounds is to have them as clean as we can with soap and water, gasoline or anything we can use but the skin must be clean of grease and dirt as nearly as possible. If the case is bleeding control the hemorrhage and as quickly as possible get the air-cooled or water-cooled light and don't pay much attention to how much you give them. I don't care if they get a third degree burn where most of the skin is off. They are then dressed either with wet or dry dressing and this treatment is followed daily. If there is much pain follows the treatment with the radiant lamp, use infra red.

Question (From the Floor): How about distance for the air-cooled lamp?

Between 36 and 45 inches on general body radiation.

Question: I mean on traumatic cases?

Just as close as you can get them. I treat all infections alike. I treat such cases as an infected foot

from a corn or small wart of the foot with the infra red and follow with ultra violet. It is very seldom you have to trim them.

Now as to charges. We have got to charge and I can charge more than the man with the prescription pad and pencil and get away with it. My cases all have medical treatment, I seldom pass up a case without it. Our druggist told me I sent more prescriptions to their store than anybody else. Why? Because they come to me for relief. But I don't get it from medicine alone. I even treat myocarditis cases; one of the best results I ever had was endocarditis following tonsil infection. I think I gave six treatments or eight. Her rapid and thready pulse came down and she is a perfectly normal individual today. Of course, I prevent her from going swimming or running races, anything like that. And just as I say, we charge more. My average price is three dollars. As I said, my cases all get medical attention.

This case of weeping eczema—I mean in a case where there is nothing except the weeping condition I don't see how you could hurt them if they haven't diabetes. She got fifteen minutes anteriorly and posteriorly then followed with ultra violet.

In cases of tuberculosis our men are advising ultra violet radiation in tuberculosis of the lungs. That is the only type of tuberculosis I have had any experience with but I have gone very, very carefully over every case that had an afternoon temperature, there is no question about the diagnosis, and they clear up. I think I had to treat one case for two months. I start out every morning with an exposure of two and a half minutes and gradually increase the minutes and gradually increase the surface of the body that is exposed, and have never had a falling down of a case yet.

We try to keep away from burns as much as possible by long distance treatment. The further away from burns you keep the more ultra violet your patient can take. I use 36 to 40 inches and try never to produce an erythema which makes the patient uncomfortable. It may make them so uncomfortable they will never come back.

822 Rialto Building.

Treatment of Asthma with Ultra Violet Rays. Jean Saidman, Journal De Med De Paris, No. 26, June 30, 1926.

The author treated 36 cases of asthma with ultra violet light. The radiations have not yielded very definite results in his adult cases. Nevertheless relapses are allayed by ultra violet light, and the number of painful attacks have been considerably reduced. In children, however, the treatment has an immense importance, not only from the symptomatic point of view, but also because it combats hytrophy, thoracic malformations and the tendency to emphysema. Moreover, certain asthmatic children who are prevented from attending school, can now continue their education, due to the success with actinotherapy. In general, ultra violet radiations have a greater beneficial effect on children.

Technique: The mercury vapor lamp has yielded only 40% satisfactory results. Since the author began using polymetallic arcs his percentage of success has almost doubled (74%). Certain cases which had, at first, been irradiated without success by the mercury vapor lamp, were later, in the majority of cases, treated successfully with the polymetallic arcs. The author treats asthma with a dose a little above medium, which provokes a moderate erythema. Treatment consists of three sittings a week until the paroxysms have disappeared, and then the irradiations are continued during the two following weeks.

Cure of Roentgen Carcinoma by Diathermocoagulation. H. Bordier, Act. Med. Scand., 66, No. 3, 1927.

The patient was a technician, who since 1895 was exposed to small doses of Roentgen rays while experimenting with Roentgen tubes. In 1907 small keratoma first appeared on the skin; in 1908 there were ocular disturbances. Since 1914 there appeared a fungous tumor on his hand. In 1918 excision and skin transplantation were performed. 1920 relapse. In 1926 the tumor occupied the angle between the second and third fingers. Abduction and adduction of the middle and index fingers were impossible. Amputation was advised by many surgeons. The author, after local anesthesia with alocaine, treated the greater part of the cancerous mass with diathermo-coagulation by means of his ball electrode. The current strength employed during coagulation varied between 150-400 ma. Three minutes were sufficient to coagulate the tumor. All pain disappeared; follow-up treatment with oleo calcaire and 1% phenol, and daily washing with boiled isotonic Na Cl solution. The scab dissolved in two weeks and was completely cicatrized in six weeks. Twelve days after complete cicatrization, a second session was necessary to finish the destruction of the parts of the tumor remaining on the palmar side. A month later cure was complete and definite. The author remarks that Roentgen wounds, especially those that have ulcerated, should not be exposed to radium therapy.

EDITORIAL

ARCHIVES OF PHYSICAL THERAPY, X-RAY, RADIUM

Disraeli Kobak, M. D., Editor

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Chicago, Illinois.

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ALBERT F. TYLER, M. D., Managing Editor

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Seventh Annual Meeting,
Chicago, September, 1928

SALUTATORY

The editorial pen, relinquished by my friend, the unfatigueable scholar, Hollender, has been taken up by the writer with mixed emotions in which "elation" is distinctly absent. A panorama of his mental feelings as related to his future editorial responsibilities would be one of somber coloring in which blue and gray were the outstanding tones. Only those who are still in that roseate period of adolescence or whose optimism never parallels the actualities of every day life would undertake newer responsibilities without due weight or care. Superimposing on an already busy life's program the editorial responsibility of a distinguished journal has therefore given sober pause to the writer. It may be mentioned that he is not unmindful of the pronounced honor that goes with the responsibilities. But of the former, the reader is not as concerned as he is with what he may do with his responsibilities. Will he continue to act as the benevolent mentor and constructive critic? Will his policies be reactionary and destructive? or will they be conservative and constructive? The reply to these and many other similar questions are more easy of answer than of observance and discharge; for it is much easier to acquiesce to a policy that has been fixed and established than to change such a policy under the impetus of newer innovations and facts.

One of the outstanding functions of an editor is to act in the capacity of an educational or intellectual weathervane; to watch for the changing scientific opinions, to emphasize the newer facts, to explode established fancies and vagaries, no matter how deep rooted they may be, and to bring to life newer innovations in apparatus, technique and research. This is a job that verily challenges the intellectual efforts of the strongest within our midst, and your editor has his trepidations and personal doubts.

The policies as laid down and carried out by your outgoing editor, Dr. Hollender, have had both the approval and co-operation of the writer, who can bespeak for it its broad scope and ambition. Its scope has been to make this

the outstanding journal on physical therapy. Its ambition has been to gather together into each issue facts that are reliable, pertinent, conservative, and scientifically accurate; to make its physical appearance as aesthetically presentable as it has attempted to make its inner pages intellectually presentable; to be unbiased, tolerant and honest in its editorial columns; to teach, if possible, and to criticise if necessary. Such a program is acceptable to your editor, whose ambition it will be to mirror back to his readers a composite of the foregoing policy in each issue, as well as to indicate scientific trend.

To reach more ably his unseen reading audience, the editor invites correspondence and constructive criticism as well as manuscripts in clinical and research subjects as related to our specialty. It is his intention not only to avail himself of the splendid material accumulated in this country, but to invite the outstanding clinicians and investigators abroad to contribute to our journal. The abstract department is to keep apace with our larger editorial ambitions, and it can be prognosticated that this valuable department with its already splendid progress will be a valuable reading adjuvant for those interested in physical therapy, as well as for the student seeking additional and up to date bibliographical references.

Research efforts in problems of physical therapy have heretofore been considered borderline investigations in biophysics and bio-chemistry and have had difficulty of acceptance in some of our recognized specialistic journals. Such investigators, it seems logical, should have the encouragement of a journal of the nature of ours, and their researches given space under a special department of Research in Biophysics. This would broaden the scope of our publication and introduce to our columns contributors and readers other than clinicians. Since physical therapy is after all but an off-shoot from the larger and more universal study of biophysics, investigative problems in this related subject should receive published encouragement in our columns.

As already indicated the writer does not enter his new task with exaggerated optimism. Nor, on the other hand, is he weighted down by bias to any method of therapy that has received legitimate recognition by the profession. It is his belief that physical therapy, in its modern interpretation is but a branch of the all inclusive school—Scientific Medicine—and hence "sects," "schisms," and "schools" are to be discouraged. In his desire to be an active participant in the modern advancement of this scientific adjuvant, and in the belief that his varied experience in this specialty may cement the already *entente cordiale* between this and scientific medicine, he willingly gives of his effort to be your editor. DISRAELI KOBAK.

TREATMENT OF INFANTILE PARALYSIS

Bordier (Acta Psychiatrica et Neurologica, Copenhagen, Vol. 2, p. 1, 1927) calls attention to a new treatment of infantile paralysis. He gives the general principles, technic and results obtained in his study.

Radiotherapy is the principal factor in Bordier's treatment of anterior poliomyelitis. This is administered to the affected segment of the spinal cord, begun as soon as possible after the febrile period. The dose is 200 R units in children under 3 years of age, gradually increased to 1,000 R units in adults, screened through 6 mm. of aluminum. A series of three irradiations is given, followed by an interval of twenty-five days; two or three series are thus administered, according to the gravity of the case.

Secondly, diathermy is administered to promote nutrition to the paralyzed parts. The administration of the diathermy does not conflict with the radiotherapy, nor *vice versa*. For restoration of paralyzed muscles to normal, a low voltage current is employed.

Bordier's experience indicates that this combined treatment considerably improves the prognosis in the gravest forms of anterior poliomyelitis and is effective in most cases of moderate gravity.

It would seem that these suggestions would act as an impetus to others, especially in our own country, to carry on this same kind of work. The value of diathermy as an adjuvant is well recognized. Stewart* recently called attention to his work in infantile paralysis and evaluates the use of diathermy as well as other physical agents. Stewart acknowledges credit to William Benham Snow for first calling attention to the possibility of employing the Morton wave from the static machine to minimize pressure destruction in the cord during the acute stage of the disease.

Emphasis is also laid on the influence of assistive, active and resistive exercises. The latter meet the indication of keeping in function the mental and motor pathways which tend to deterioration from disease.

It is quite evident that in physical therapy there are definite aids which have marked progress in the management of infantile paralysis. In fact these have been the only advances in this malady during the past decade. Here is an open and unexplored field for investigation. The experiences of Bordier, Stewart and others are assurances that much can be accomplished along the lines suggested by them. Their work is of a pioneering nature. —A. R. H.

*Treatment of Infantile Paralysis, Harry Eaton Stewart, M. D., Physical Therapeutics, March, 1927.

A CLINIC FOR PHYSICAL TREATMENT IN LONDON

A clinic for physical treatment in London is to be established on the lines of those already existing in Germany. The systematic combined use of physical remedies on a large scale will be to some extent a new departure in England. The proposed clinic will be founded with the purpose of providing facilities for concurrent investigation and treatment for incipient, subacute and chronic diseases, particularly for rheumatic diseases in insured persons, and also for the results of injuries. It will be conducted in the spirit of co-operation with the voluntary hospitals and with the British spas. According to official statistics, more than 370,000 persons under the national health insurance act alone seek relief annually for rheumatic diseases. There are, therefore, many thousands of rheumatic persons who require treatment in London. The object of the clinic is: (a) To treat the subacute and chronic forms of rheumatism and prevent the development of mechanical disabilities. (b) To attempt to resolve the exudations and adhesions that have already formed and to restore the patient's working capacity, and to alleviate many conditions that cannot be completely cured. A large proportion of persons with rheumatism are still at work, and it is believed that many more might remain at work if they could be treated at the clinic after working hours. (c) To carry out systematic investigations. In general, the patient will have at each visit two or more of the following methods applied in succession, and this combined treatment will be continued, usually thrice weekly for from two to four weeks, slight cases requiring only brief treatment: 1. Heat and cold and movement: in water, vapor and hot air, locally and generally applied. 2. Manipulation and exercises, alone or in combination with heat, by the hand or by douches or whirling water. 3. Radiations, as heat, light and invisible rays (ultra violet and infra red), from arc or mercury vapor or other lamps. 4. Electricity—constant current to resolve exudations and promote nutrition; interrupted current to cause movement of the muscle fibers, and high frequency current (diathermy) to raise the temperature of deep-seated parts. Such a mass of clinical material will necessitate the appointment of a medical director and staff having expert knowledge of physical methods of treatment.—J.A.M.A. 89:24, 2052, Dec. 10, 1927.

THE BUDAPEST CONGRESS

SEPTEMBER, 1928

"The Fifth International Medical Congress for Industrial Accidents and Occupational Diseases" is to be held in Budapest during September, 1928. The executive committee consists of the following: President, Dr. Tibor de Verebely, professor at the university; vice president, Dr. William de Friedrich, professor at the university; secretary-general, Privatdozent Dr. George Gortvay, section chief.

The national committee for the United States has been created and consists of the following: Dr. Volney S. Cheney, Chicago; Dr. R. W. Corwin, Pueblo; Dr. Eugene L. Fisk, New York; Dr. Otto P. Geier, Cincinnati; Dr. Leonard Greenburg, New Haven; Dr. George M. Kober, Washington, D. C.; Dr. W. J. McConnell, Philadelphia; Dr. Lloyd Noland, Birmingham; Dr. Francis D. Patterson, Philadelphia; Dr. George M. Price, New York; Dr. Frank L. Rector, Chicago; Dr. Wm. A. Sawyer, Rochester; Dr. Henry F. Smyth, Philadelphia; Dr. C. E. A. Winslow, New Haven, and Dr. Emery R. Hayhurst, Columbus, chairman.

Addresses already scheduled by various prominent Europeans include the following: Prof. J. Liniger, Frankfurt a. M.; Dr. F. Zollinger, Aarau; Prof. K. B. Lehmann, Wurzburg; Sir Thomas Oliver, London; Prof. J. G. Sleeswijk, Delft; Prof. Jutten, Munster; Prof. Koelsch, Munchen; Prof. Julius van der Hoeve, Leiden; Prof. Dr. Stephan Jellinek, Wien. Also lectures are scheduled to date by the following: Prof. Salvatore Diez, Rome; Dr. C. Poenaru Caplescu and Dr. Presbeanu, Bukarest; Prof. Theodor Sommerfeld, Berlin; Dr. Lorenz Bohler, Wien; Prof. Dr. Quensel, Leipzig; Prof. Dr. C. Marcus, Breslau; Prof. Dr. Molineus, Duesseldorf, and Sanitatsrat Dr. Alfred Peyser, Berdin-Charlottenburg.

Addresses and lectures are wanted from American physicians, dentists, and other specialists in the field. Such are requested to get in touch with the chairman for the national committee for the United States, Dr. Emery R. Hayhurst, Hamilton Hall, Ohio State University, Columbus, Ohio. General invitation is also extended to attend the congress which will be arranged so as to co-ordinate with the "Deutscher Naturforscher Tag" to be held in Hamburg, and the "Orthopadenkongress," to be held at Prague during the month of September, 1928.

EUROPEAN TOUR

AMERICAN COLLEGE OF PHYSICAL THERAPY

1928

To Attend Lectures - Clinics - and Visit the Leading Centers of Physical Therapy

Mindful of the great benefits to be derived from first hand contact with European leaders in our profession, *The American College of Physical Therapy* invites you to attend a series of lectures to be held at the leading centers of physical therapy abroad. You will note the itinerary has been very carefully planned to give ample time for clinics and lectures as well as an opportunity to visit principal points of interest in the various cities. While en route on the Atlantic liner a systemized course of lectures will be given on physical therapy by two leading teachers in this special work. There will be demonstrations and personal conferences in all branches of electro-physical therapy.

The steamships used are well known Cunard cabin boats offering every comfort at minimum rates, and only hotels of repute will be used. For those desiring to attend the Radiological Congress at Stockholm in July an extension tour can be arranged at very little additional cost. Ladies are welcome, special provisions having

been made for their diversion while the doctors attend the lectures and clinics.

The membership fee is $977 from New York to New York, which includes all steamboat, railroad and motor car fares, hotel accommodations with table d'hote meals; all sightseeing, as provided in the itinerary, and all tips to hotel staffs and baggagemen, except in England where tipping en masse is resented. A large suit case is presented to each member, which will be transported through the trip free of charge.

This is an unusual opportunity for the doctor to combine a pleasure trip with one that will give him a very intensive course in physical therapy, together with close observation of the work in this specialty that is being carried on by the pioneers of Europe. The instruction course which will be offered on the voyage en route will in itself give the doctor:

(1) An opportunity to acquaint himself with the fundamentals and practical experiences of recognized specialists. This means that it is not absolutely necessary for one previously to have had any experience with the use of physical agents.

(2) An intensive and thorough review course in every branch of electro-physical therapy as employed in all the various specialties of medicine and surgery.

The visits at the various hospitals and clinics in the prominent cities of Europe and the personal contact with the clinicians who have developed physical therapy will tend further to augment the preliminary instruction work. All in all, this combined and systematized method of offering such an intensive plan should indeed be an attraction to every physician. *The American College of Physical Therapy* is very glad to offer this means to its fellows and other physicians who are interested in physical therapeutics.

ITINERARY

May 26. Sail from New York.
June 4. LONDON.
June 5. St. Bartholomew's Hospital.
June 6. Middlesex Hospital.
June 7. London General Hospital.
June 8. Lord Trelor Hospital.
June 9. Leave 9 a. m. Arrive Paris 4 p. m.
June 10. PARIS: Motor to Versailles.
June 11. Sal Petre & American Hospitals.
June 12. Prof. D'Arsonval's clinic.
June 13. Dr. Riviere's clinic: Hotel Dieu.
June 14. Guests of Soc. Electrotherapy
June 15 and Radiology of France.
June 16. Leave 8 a. m. Arrive Lausanne 5:20 p. m.
Leave 8:25 p. m. Arrive Montreux 9:07 p. m.
June 17. MONTREUX.
Castle of Chillon.
June 18. Motor to Leysin.
Prof. Rolliere's clinic.
June 19. Leave 11:05 a. m. Arrive Zurich 7:06 p. m.
June 20. ZURICH. University of Zurich.
June 21. Leave 8:24 a. m.
June 22. VIENNA.
Dr. Kowarchik's clinic.
June 23. Allgemeine Krankenhaus.
June 24. Pottsdam.
June 25. Kaiser Jubilaum Spital.
June 26. Other clinics and hospitals.
June 27. Leave 8 a. m. Arrive Berlin 10:27 p. m.
June 28. BERLIN. Dr. Rudolf Verchow Krankenhaus.
June 29. Dr. Nagelschmidt's clinic.
June 30. Other clinics.
July 1. Leave 8:20 a. m. Arrive Copenhagen 7:05 p. m.
July 2. COPENHAGEN.
Finsen Institute.

July 3. Dr. Carl Sonne's Laboratory.

July 4. Sail for New York.

Above tour subject to change at discretion of Director of Travel.

For further information address *The American College of Physical Therapy*, travel department, 25 Broadway, Suite 656, New York, N. Y.

SECOND INTERNATIONAL CONGRESS OF RADIOLOGY

The second International Congress of Radiology will be held at Stockholm, Sweden, July 23 to 27, 1928, under the patronage of His Royal Highness, Crown Prince of Sweden, together with President Dr. Gosta Forssell, Hon. Secretary-General, Dr. A. Renander and Hon. Treasurer, Aug. Nachmanson.

The congress will be divided into sections on roentgen diagnosis, radiotherapy, medical electrology and physics, as well as discussion on instruction in these various subjects.

It is planned to publish a portrait catalogue so that those who join should send with their remittance an unmounted 5x7 or 3x3 recent photograph. This together with the membership fee of 40 Swedish crowns should be mailed to Dr. George E. Pfahler, 1321 Spruce street, Philadelphia, Pa. Checks and money orders should be made payable to the International Congress of Radiology.

During the meeting there will be a discussion of the establishment of an international unit with dosage of roentgen rays. There will also be a large exhibit of various forms of apparatus.

CORRECTIONS

In the December, 1927, issue in an article by Dr. I. L. Kaplan, the initials should have been I. I. On page 630, third paragraph, eighth line, the word worn should have been work; page 642 in paragraph on production of x rays, fourth line, insert word "by" following done; page 643, paragraph describing type of rays, hard rays should have K. V. peak of 200 instead of 180.

On the Effect of Ultra Violet Rays on Idiopathic Hemeralopia and Keratomalacia. Adalbert Fuchs, Wiener Klin. Wschr., No. 25, June 23, 1927.

The author reports a case of hemeralopia and a case of keratomalacia which he successfully treated with ultra violet radiation. The hemeralopia case was not due to a vitamine deficiency, the diet being rich in all vitamines. Physical examination showed normal eyesight, except xerotic spots on the conjunctiva. The patient received, on successive days, two irradiations on his chest, and one on his back. His night blindness disappeared suddenly, but the xerotic spots remained unchanged. The patient seen one year later states that he has been completely cured since the treatment. Here it is not a case of a mere lack in vitamin A, but some hindrance either in the structure of the vitamin, or in its effect on the organs, which disappears upon irradiation. In connection with this it is interesting to mention two cases of hemeralopia with xerosis which were treated by Block with ultra violet radiation. They continued to receive the diet to which they were accustomed, poor in vitamin A. Irradiation brought about no change, and only when vitamin A was injected did the xerosis and hemeralopia slowly recede. Ultra violet light cannot replace vitamin A, but can only have a favorable influence on its utilization by the body. There must therefore be sufficient amount of the vitamin in the diet.

The case of keratomalacia was completely cured by ultra violet irradiation. The patient was a 6 weeks old baby boy. On the first day, the back and abdomen of the child were irradiated for 3 minutes each by artificial light. The distance from the lamp was 60 cm. On the second day the irradiation was continued for 10 minutes. On the third day it was noticed that the progress of the ulcer which formed a part of the disease picture, was arrested. On the fifth day, the mother's breast and the cow's milk given to the child were also irradiated. At the end of 3 weeks, all symptoms had disappeared and the child had gained 700 grams. In this case the diet had not been changed; nevertheless there was a striking and remarkable improvement of the xerosis and the general condition of the child.

THE STUDENT'S LIBRARY

BOOKS RECEIVED

This column is devoted to acknowledgment of the books received. Such acknowledgment must be regarded by the sender as sufficient recognition of the courtesy until time and space permit selections to be made for review.

THE INTERNATIONAL MEDICAL ANNUAL, *Carey F. Coombs,* M. D. (Medicine) and *A. Rendle Short,* M. D. (Surgery). Pp. 560. Illustrated. William Wood & Company, New York City, Publishers, 1927.

DENTAL MATERIA MEDICA AND THERAPEUTICS, *Hermann Prinz,* A. M., D.D.S., M. D., Sc. D., Prof. of Materia Medica and Therapeutics, the Thomas W. Evans Museum and Dental Institute School of Industry, Univ. of Pennsylvania, member of the U. S. Pharmacopeia and Formulary Committee, American Dental Association. Sixth edition. Pp. 616, 146 illustrations. The C. V. Mosby Co., St. Louis, publishers.

DISEASES OF THE NOSE AND THROAT, by *Sir St. Clair Thomsom,* F. R. C. P. London, and F. R. C. S. England. Third edition. Pp. 943, 377 illustrations. D. Appleton & Company, New York City, publishers.

INTERNATIONAL CLINICS, Vol. 3, 1927. Pp. 312, 9 colored plates, 32 illustrations. J. B. Lippincott Co., Philadelphia.

RADIUM IN GYNECOLOGY, *John G. Clark,* M. D., and *Charles C. Norris,* M. D. Pp. 315, 47 illustrations. J. B. Lippincott Co., Philadelphia, $8.00.

ACTINOTHERAPY FOR GENERAL PRACTITIONERS, *H. G. Falkner,* L. R. C. S. I., L. R. C. P. I., L. M. Rat. Dub O. B. E. Pp. 152, 36 illustrations. Wm. Wood & Co., New York, $3.00.

SURGERY OF THE COLON, by *Fred W. Rankin,* A. M., M. D., F. A. C. S., Visiting Surgeon St. Joseph's and Good Samaritan Hosp.; Surgeon to Lexington Clinic, Lexington, Ky., etc. One of the "Surgical Monographs" under editorial charge of *Dean Lewis,* A. B., M. D., Prof. Surgery Johns Hopkins; *Eugene H. Pool,* A. B., M. D., Attending Surgeon New York Hospital; and *Arthur W. Elting,* A. B., M. D., Prof. Surgery Albany Medical College. Cloth. Pp. 366, with 152 illustrations. D. Appleton & Co., New York, 1926.

APPENDICITIS, by *Hubert Ashley Royster,* A. B., M. D., Surgeon to Rex Hospital, Surgeon-in-Chief St. Agnes Hospital, Raleigh, N. C., former President Southern Surgical Ass'n. A surgical monograph under editorial charge of *Dean Lewis, Eugene H. Pool* and *Arthur W. Elting.* Cloth. Pp. 370, with 54 illustrations. D. Appleton & Co., New York, 1927.

PERITONITIS, by *J. Garland Sherrill,* M. D., F. A. C. S., Col. M.O.R.C., U. S. Army, formerly Prof. Surgery, Kentucky Univ. Med. Dept., formerly Prof. Surgery, Univ. Louisville Med. Dept., etc. A surgical monograph under editorial charge of *Dean Lewis, Eugene H. Pool,* and *Arthur W. Elting.* Cloth. Pp. 397, with 65 illustrations. D. Appleton & Co., New York, 1925.

SURGERY OF STOMACH AND SMALL INTESTINE, surgical monograph, by *J. Shelton Horsley,* M. D., Attending Surgeon St. Elizabeth's Hospital, Richmond, Va. Under editorial charge of *Dean Lewis, Eugene H. Pool,* and *Arthur W. Elting.* Cloth. Pp. 325, with 153 illustrations. D. Appleton & Co., New York, 1926.

BOOKS REVIEWED

TEXTBOOK OF SURGICAL PATHOLOGY, by *C. Jennings Marshall,* M. D., M. S. (Lond.), F. R. C. S. (Eng.), Assistant Surgeon to the Charing Cross Hospital and to the Victoria Hospital for Children; Lecturer on Surgical Pathology, Charing Cross Hospital Medical School; and *Alfred Piney,* M. D., Ch. B. (Birm.), M. R. C. P., M. R. C. S., Director of the Institute of Pathology, Charing Cross Hospital. Cloth. Pp. 492, with 173 illustrations. D. Appleton & Co., New York, 1925.

A surgical pathology is not a text constructed for the laboratory medical student, but is designed for use

during and after the clinical years. In such a text there should be an attempted correlation of embryology, anatomy, pathology and clinical observation with the disease entity under consideration. Space should not be devoted to the description of the details developed in the course designated as general pathology, but there should be sufficient facts taken from the fundamental sciences to explain the clinical situation that exists. In the construction of this text, it is evident that the authors have adhered closely to these principles.

Only a few pages (twelve in number) are devoted to a brief review of the fundamental pathological processes: inflammation, trauma, infections, tumors, shock. Particularly interesting is the presentation and brief discussion of the various theories as to the etiology of shock and the inadequacy of any and all these theories.

The various disease entities have been grouped either under an anatomical or embryological class, sixteen of these groups having been used: the scalp, cranium and its contents; the skin, gangrene, and edema; diseases of the vascular system; the ductless glands; the face, buccal and nasal cavities; diseases of the alimentary canal; the liver, gallbladder, bile ducts and pancreas; the gut, mesentery and retroperitoneal structures; peritoneum, abdominal parietes, hernia; genito-urinary system; the breast; the bones; the joints; the spinal column and cord; bursae, muscles, tendons, peripheral nerves; and deformities.

It is difficult to visualize the sequence or rational of such a classification, but the work has been developed in a brief yet detailed, outlined, systematic and correlated manner. It should be of tremendous interest to the junior and senior students. Its value to the surgical and pathological interns cannot be questioned and the general practitioner has much to gain from its study.

GALVANIC CURRENTS AND LOW VOLTAGE WAVE CURRENTS IN PHYSICAL THERAPY. By *G. Betton Massey*, M. D., and *Frederick H. Morse*, M. D., the Falcon Press, publishers, Boston. Pp. 190. Illustrated.

Part 1 includes eighteen chapters, covering the following: A discussion in general of the galvanic or direct current, resistance, chemical effects, therapeutic action, therapeutic uses, diffusion of drugs within polar regions. caustic ion in surgery, low voltage wave currents, electro-diagnosis, general surgical applications, galvanic current in dermatology, ophthalmology in the nasopharynx, oral cavity and ear, galvanism in gynecology, urology and proctology.

Part 2 considers the low voltage alternating current with five chapters on the alternating current, intestinal infections, relation of epilepsy and asthma to intestinal toxemia and epilepsy. There are 65 illustrations.

The book is comprehensive in scope and is written so that the busy practitioner of medicine who has little time to peruse exhaustive medical literature, or experiment in new fields, may be enlightened quickly.

The authors are well known authorities on the subject of galvanism and unfortunately one of them, Dr. Massey, passed to the great beyond before the work was completed. Fortunately, however, the co-author was thoroughly competent to complete the volume himself, so that nothing is omitted nor is any authoritative material lacking in any way.

The book itself is simply representative of the progress of physical therapy in general. The section on sine currents is especially commendable, because the average book on physical therapy is scant with its information in this field. The illustrations are well selected and assist greatly in an understanding of some of the points brought out in the text.

RADIUM IN GYNECOLOGY, *John G. Clark*, M. D., *Charles C. Norris*, M. D., and *Gioacchino Failla*, E. E., M. A., D. Sc. Pp. 315, 47 illustrations. J. B. Lippincott Co., Philadelphia, $8.00.

This newest of books in the use of radium in gynecology presents the subject in a thorough manner. The opening chapter is devoted to an interesting historical sketch. The second chapter deals with the physics of radium and the third with pathology and action of radium. The remainder of the book deals with the clinical application of radium in gynecology. The following chapter headings the used: Malignant Tumors of the External Guitalia, of the Vagina, of the Cervix Uteri, of the Body of the Uterus. Myoma of the Uteri and Myopathic Hemorrhage. Cervicitis Sterility and Dipmenorrhoea.

The diction is clear and forceful, the argument logical, the type clear and the illustrations excellent. This book is a valuable contribution to the literature on radium and its clinical uses.

OBESITY, *Leonard Williams*, M. D. Cloth, Pp. 171 with 200 Oillustrations. Oxford University Press, New York, 1926.

The author of this little text has been recognized by his previous writings, "Minor Maladies," and "Middle Age and Old Age;" yet he has the audacity to introduce his preface with "the excuse for this book is that no work in English dealing with the subject has appeared for a great many years." Ordinarily it is not deemed necessary for one who has proven the value of

his works to offer an excuse for another text equally as valuable to the advancement of the medical art.

In paving the way for the presentation of his subject, the author first defines himself by contradicting a previous classification that has been made of obese individuals: the enviable, the comical and the pitiable. "Such a classification is based upon a false estimate of values; for no case of obesity is enviable, most of them are in a sense comical, and all are pitiable." He divided obese individuals into two classes: the alimentary type and the endocrine type. In the alimentary type, the cause is overfeeding, percipitated by a desire on the part of the appreciative female to stuff the greedy male, an imaginary desire or flimsy excuse on the part of the male to "keep up strength" by gormandising, the close association of overeating with sleep, excessive drink, and unmastication or bolting. Climate, race and heredity play their role in the production of an alimentary obese individual, yet "an alimentary fat man, whether he be a *faux maigre* or frankly fat, is made, not born; and in the making of him the knife, fork and trencher are allied forces."

Such activities assist disease processes by inhibiting in the production of resistance against them. Such a relationship is cleverly pointed out in the chapter on "The Bantlings of Obesity."

The discussion up to this point has centered itself around the male. In the section headed "Eve," the question of obesity in the female is considered. Here the same general classification, alimentary and endocrine types, holds true, but he reclassifies the female into two groups, the "cocotte and mere" types. In the former type, sex is interpreted as sexual congress, children being the ultimate result, but the husband always occupies the foreground. She it is who never shows the phenomenon of provident fatness, but will assume a homosexual activity rather than submit to obesity or lose her place in society. The latter type looks upon sex as a minor item in the great cycle of reproduction, the child being the wherewithall, the beginning and the end. She it is who early develops obesity without the least redress. In both the male and female, endocrinology plays its role in the causation of obesity. In presenting this phase of the problem, our present knowledge of endocrinology is reviewed.

"Every passer-by is ready to prescribe for obesity; and, however fantastic the prescription, every obese person is ready to give it a trial." Dr. Williams' prescription varies with the causative factor and the type of individual so damned. Subsequent pages are devoted to tables on the average weights for men, the average weights for women, average weights and heights in the young, a modified bantling dietary and an unfired dietary.

The work of Leonard Williams is highly instructive, filled full of common sense ideas, and is so constructed in an air of jollity and simplicity as to render it enjoyable reading. The publishers have maintained their high standard in the production of a durable and attractive text.

TEXTBOOK ON DISEASES OF THE SKIN AND SYPHILIS. Designed for the use of Students and Practitioners, by *Albert Strickler,* M. D., Professor of Dermatology and Syphilology. Temple University Dept. of Medicine. With 218 illustrations, including 6 full page plates, some in colors. Philadelphia, F. A. Davis Company, publishers, 1927. Pp. 689.

The author's experience as a teacher has shown him the need of a treatise such as this, constructed on sound pedagogical principles. There are embraced certain special features: (1) the exact purpose of medicaments; (2) tabular form of differential diagnosis, and (3) a systematic procedure of describing the various ailments. For classification the etiologic phase has been adopted. The author realizes hat this plan is not without fault, but felt that it would serve better than a more or less haphazard grouping of the various dermatological affections.

The section on physical agents, although an advance, so far as other textbooks are concerned, is woefully deficient for the scant information which it imparts. The literature is replete today with authentic reports on the use of physical agents in dermatology. It is hardly possible, therefore, to cover this subject in a modern textbook in three pages. Nor is occasional reference in the text itself satisfactory for the uninformed or skeptic.

The value of roentgen therapy and radium therapy is also discussed, but much too briefly.

There is little question, however, concerning the value of this new text for those interested in dermatology. Especially valuable are the charts giving differential diagnosis. The manner of presentation is clear and concise and the book itself appears free from the usual text book padding. The illustrations are good and could hardly be improved upon.

All in all this volume is to be commended with the suggestion that it would probably be more modern were it to contain more of the recent developments with physical agents and their especial usage in the treatment of dermatologic lesions. The one exception, probably, is the rather free discussion rendered for the treatment of new growths, in the course of which, frequent and rather full description is given of electrocoagulation and electrodesiccation.

INTERNATIONAL ABSTRACTS

On the Use of Ultra Violet Rays in the Treatment of Cirrhotic Ascites. Noel Fissinger. Journal des Practicients, No. 23, June 4, '27.

A certain degree of success can be obtained with ultra violet rays in certain cases of cirrhotic ascites which are refractory to treatment with diuretics and mercury cyanurets. However, only such cases are to be selected in which there is not a marked liver insufficiency. This insufficiency is characterized by dry tongue, distinct icterus, diffuse edema and lack of appetite. A tendency to hemorrhages with purpura, and repeated nose bleedings also form contraindications for irradiation; similarly the presence of pulmonary tuberculosis or nephritis. The taut skin of ascites patients has a sensitivity which must be ascertained in order to decide on the duration and frequency of the irradiation. A relative drying is obtained in 10 to 20 sessions, that is a medium degree of ascites remains in the middle stage and further puncturings are dispensed with.

Diseases of the Lymph Nodes of the Neck and Their Treatment. Dr. Paul Karger, Fort. Der Med.,I. Quarter, March 31, 1927.

The author gives a systematic sketch of the procedure upon finding enlarged lymph glands of the neck. The location and source of lymph drainage are of the utmost importance in diagnosing the disease which caused the enlargements. Radiation therapy is indicated in many of the gland swellings. In treatment of the neck lymphomas, radiation is competing more and more with the scalpel of the surgeon, and in recent years, the lymphomas are only in exceptional cases the object of surgical intervention. This applies particularly to the tuberculous diseases. Radiation therapy has, to be sure, the disadvantage in that the treatment stretches over many months, but on the other hand, it has the advantage of not leaving any scars or other skin changes. There is no danger of a lung infection from the tuberculous glands, since there is no lymph stream from the neck to the thorax.

Abscessed glands should always be irradiated after they have been drained. All glands of the neck which are tuberculous, and which are not abscessed, not caseated nor calcified and do not lie beneath inflamed skin should be irradiated. There is not much to expect from quartz lamp or irridation. The following indications and technique are based on the work of Czerny and Karger.

The technique purely schematic is as follows: Inductor; 35 cm. spark gap. Mercury interrupter. Muller-Sicde cooling tube with Fern-Osmo regeneration 1.8 to 2.5 miliamperes. Focal distance of the skin averages 20 cm. Surface of lead rubber. Filter 3-4 mm. aluminum emits about 10 to 11 gamma per treatment, Time of irradiation 10 to 15 minutes.

As far as Roentgen irradiation is concerned, it does not make any difference whether the lymphoma is tuberculous or not, if the only object is the removal of the tumor.

What can be expected from irradiation of lymphomas? There are many possibilities:

1. Recently enlarged glands, after a temporary swelling after the first irradiation, recede almost to impalpability. This results in about 1 to 3 irradiations, that is in about 2 months.
2. Even after the first irradiation, about 8-14 days, there results a rapid decrease and separation of large gland masses. These are almost always lymphogranulomatoses.
3. After a number of irradiations the glands become invisible, but are still palpable to pea to bean sized hard nodes. Further irradiation does not change the result.
4. After irradiation, large conglomerated tuberculous tumors first separate into single discrete glands. Then the fresh periade nitis is attacked, and only then the actual chronic process is affected.
5. After the first irradiation there is abscess formation. Puncturing yields tuberculous pus or caseous particles.
6. Fistulous glands are closed.
7. The gland tumor remains unchanged.

Effect on the Eyes of Sun and Artificial Light, Boussi, Journal De Med. De Paris, No. 12, March 21, 1927.

There is no antagonism between the infra red and ultra violet rays. Their synergistic action, particularly on the cornea and the sclera, is perfectly well established. From the point of view of results it is difficult to differentiate between them, and their presence

together is the cause of a given lesion. Theoretically, burns are due to the infra red ray.

All the eye lesions caused by too intense light are due to all the rays emitted by the sun and acting together. This includes the invisible and the actinic rays. The proportion between them however may vary as to quantity. In general the ultra violet rays have no effect on visual acuity, but have a noxious effect on the eye in general, on the external and accessory membranes, and on the retina.

The eye protects itself against normal radiations of the sun. The ocular membranes constitute the defensive mechanism against the ultra violet rays. The lens possesses the power of absorbing ultra violet rays, and this power varies according to its structure and the age of the individual. The lens of man under 20 years of age cannot absorb rays between Oμ3300 and Oμ3100. A large part of the ultra violet rays are absorbed by the ocular membranes. The cornea has a very weak absorbing power. The lens has a very high power of absorption which increases with age. This is due to the increase in albumins. The central part has the greatest absorbing power. This is also due to the fact that the center contains more albumins than the periphery. The aqueous humor and the vitreous body have a weak absorbability as compared to the cornea. The statement can be made that the absorbing power of the lens and the cornea differ according to the individual, his state of nutrition and his occupation.

Ultra violet rays of wave length Oμ3400 to Oμ3800 can penetrate to the retina and injure the deep membranes. The defensive mechanism of the sound eye can cope with the rays emitted by artificial light of medium intensity. When the ultra violet rays are increased, the eyes must be protected by glasses which absorb the greatest part of a shorter wave length than Oμ3600. If these conditions are not observed, ocular accidents will follow.

To avoid all eye inflammations, the following should be strived for:

1. Suppress the ultra violet rays which are the noxious rays.
2. Diminish the intensity of the visible rays.

In the first case glasses should be used which contain lead and the rare earth salts, especially didymium.

In the second case where one desires to diminish the passage of the actinic rays, glasses especially rich in lead and containing uranium and iron oxide must be employed. According as to whether their tint is more or less deep, they will alow the passage of more or less visible rays and infra red rays.

Three Phases in the Treatment of Cancer, and Histogenetic Radiation Therapy. Dr. Paul Lazarus, Deutsche Med. Wschr., No. 11, 12, 13, 1927.

The natural reaction of an organism to carcinoma consists of a defensive inflammation of the focus of disease, and a stimulation of the defense system of the entire organism resulting in the isolation of the carcinoma by a connective tissue wall, and finally a cicratization and cure by a reactive inflammation. The malignity can be destroyed, clinically, by the application of liquid light intratumorally (explained below), and the defense of the parent tissue can be increased by peritumoral application.

Liquid light consists of the following: The tissue is impregnated with radiant matter in the greatest possible dispersed insoluble form: 100-2500 electrostatic units Thor. X per. cc. of tissue. The ordinary B radiation applied intratumorally or superficially, can destroy tissue of 7 mm. radius in a short time, and sterilize infected tumors, this causing cicatrization through a strong neighboring inflammation. Lead aluminum plates on the surface of the tumors, dusted with thorium X are used for this purpose or for deep application in intratumoral radiation.

Weakly filteed thorium x radium or mesothor-radiothor radiation in especially adapted for the treatment of superficial tumors, such as those on the eye lids, lips, tongue and larynx. It has the advantage over γ radiation in a higher intensity for a shorter duration of treatment. Radium and mesothorium contain 10 times as much energy as Roentgen rays. Radium, Thorium, etc., are more effective than Roentgen rays for the isolated irradiation of cancer because an intensive effect on the focus is obtained without destruction of neighboring parts. Preoperative irradiation is indicated for the purpose of sterilizing and isolating the focus of disease.

The carcinoma is a genetically complex disease process and demands a synthetic treatment of three phases. This treatment is aimed at the organism, the parent tissue and the cancer focus. The spacial, histological and technical aims are to be varied according to the biological structure of the carcinoma and its medium. The maximum irradiation, (lethal dose), is to be applied solely on the carcinomatous focus for the purpose of a complete necrobiosis. A somewhat smaller dose (angioma dose) is to be applied to the neighboring zone for the purpose of isolating it with an inflammation of demarkation, tissue obliteration, and connective tissue capsulation. In addition there is also a stimulation of the lymphatic, erythropoietic, hormonal, vascular and cutaneous defense powers of the organ-

ism. The application of liquid light to the skin needs especial consideration. There should also be a follow-up radiation treatment, as in any other constitutional disease.

Roentgen Therapy of the Inflammatory Diseases of the Organs of Locomotion. F. Kraus, Med. Klin., No. 7, 1927. Abstract—Wiener Klin. Wschr., No. 11, 1927.

The inflammatory diseases of the peripheral nerves are influenced favorably by Roentgen treatment, and in many cases are entirely cured. Thus good results were obtained in the neuritis of the femoral nerve, tibial, peroneal, sciatic nerve and brachial neuralgia in which the emerging nerve and the root is irradiated. The post neuritic paralyses are also cured by Roentgen irradiation, and since small doses are harmless, this therapy is indicated. Roentgen irradiation is also indicated in poliomyelitis. Good results are obtained in gonorrheal tendo-vaginitis, muscle rheumatism, chronic and acute rheumatism and isolated arthritis. The patient must be informed of a transient rise in pain which is often to be expected as a first reaction of Roentgen irradiation (especially in neuritis and acute arthritis).

Light Treatment in Cases of Surgical Tuberculosis. Ole Chievitz, Acta Radiologica 5-Fasc. 2, No. 24. Abstract—Fort. Der Med., No. 34, 1926.

From the experiences of the author, the deduction can be made that pulmonary tuberculosis with fever are not contra-indications in light therapy, as is generally maintained. It is only a matter of using the proper dosage of light. A localized reaction of a focal lesion after the first irradiation is a warning to discontinue the treatment. In every case of tuberculosis, especially surgical tuberculosis, the general treatment is of especial significance. It is of value to combine Roentgen treatment with the general light treatment.

Roentgen Treatment of Neuralgia, Muller Munchener Med. Wschr., No. 46, November 12, 1926. Abstract—Fort. Der. Med., No. 34, 1926.

Any surgical treatment, be it only injections, interferes with the success of Roentgen irradiation. A single plan of treatment for neuralgia is necessary. After acute pain disappears under antineuralgica and heat, Roentgen therapy should be tried. Only when irradiations yield negative results should surgical measures be considered. Irradiation is to be considered unsuccessful, when after two applications, there is neither an improvement nor an increase in pain lasting several hours. To explain the effect of the Roentgen rays a rise in pain of the nerve must be assumed, as a result of the hyperemia produced by the irradiation. It is an unjustified fear that adhesions may result from Roentgen treatment, and thus make difficult a later surgical intervention. Extraordinary, lasting results are obtained in trigeminal neuralgia, especially in fresh cases. The high percentage of failures in ischialgia, despite the same technique has not yet been explained.

Light, Erythema, Pigmentation, Wave Length. H. Guthmann, M. M. W., No. 10, Abstract—D. M. W., No. 14, 1927.

The rays under $280\mu\mu$ also cause a definite effect on the skin in the sense of a light erythema; erythema and pigmentation are still caused by radiations of over $312\mu\mu$ of a sufficient intensity. However, in a radiation which contains only light of a greater wave length than $435\mu\mu$, no effect is to be obtained, even with irradiations lasting an entire day. There must be a differention between the acute erythema caused by rays of $320\mu\mu$ or below, and the pigmentation caused by large amounts of light even of wave length of $320\mu\mu$. Indeed the radiations up to $323\mu\mu$ cause more of a pigmentation, which completely overshadows the erythema. If to a radiation of a greater wave length than $320\mu\mu$, a radiation of a shorter wave length is added, then small displacements toward the side of shorter waves are sufficient to cause an enormous rise in the effect of the radiation.

On the Use of a Gas as a Vehicle for the Introduction of Radioactive Emanations. M. Raoul Bayeux and Georges Vaugeois, Journal de Med. de Paris, No. 19, May 12, 1927.

The introduction of radioactive emanation into an organism causes a general stimulation of its metabolism. The emanations benefit arthritis, gout, toxemias and anaphylactic states. In place of the other methods in use, the authors wish to substitute hyppodermic injections of a radioactive gas which will make the application to a cavity of an exact radioactive value, in a minimum volume, and of a definite strength. One of the authors (G. Vaugeois, Academie des Sciences, 1926, p. 1277) has devised metalic tubes which enclose a vessel filled with a radium or thorsalt specially prepared and containing the proper dose. A definite quantity of radon and thoron is liberated which is injected in conjunction with a gas as a vehicle. These tubes are light and small: length—7cm., diameter—1.6 cm., weight 80 gr. To dispense the radioactive gas with desirable precision, the exact oxygenator of Bayeux Richard is adjusted to the tubes by an india

rubber tube. This permits the emanation to be swept into a variable gaseous volume and thus can not only be administered in hypodermic needles, but also in intraorganic or intrasplancnic insufflations. The connection is made by two joints placed at each end of the metalic tubes. Two stop cocks allow the closing of the emanation-producing tube so that the emanation can accumulate. The rate of the delivery of the oxygenator can vary between 10 and 500 cc. per min. so that there is a great elasticity in its use. Each emanation-producing tube is connected directly to the instrument used for the introduction of the emanation (hypodermic needle or canula). Thus the emanation does not come in contact with the rubber.

Experiments on the Selective Effects of Ultra Violet and Radium Rays. Dr. Jacob Seide, Deutsche Med. Wschr., No. 8, Feb. 18, 1927.

Every cell has its own degree of sensitivity towards radiant energy. This is theoretically explained by the so-called law of Bergonie and Triboudeau. This law states that the progressive differentiation of a cell leads to a lessened radiation sensitivity. The author used ultra violet and radium rays in his experiments on Rotator Hydatum Senta. As a source of ultra violet rays he used a quartz lamp. The irradiations were accomplished in such a way, that the animals to be exposed were placed in a water filled cup held perpendicularly under the lamp tube at a distance of 40 cm. This distance was maintained throughout the experiment, and in order to change the dose only the exposure time was varied. The erythema dose was thus reached in 1¾ minutes. As a source of radium radiations a radium bromide preparation of about 11 mg. was used.

A comparison of the results obtained from the ultra violet and radium experiments shows that the so-called law of Bergonie and Triboudeau has no validity in the realm of biological effect of ultra violet rays. Whereas the progressive differentiation of a cell increases its resistance towards the effect of Rontgen and radium rays, the opposite holds true when there is a question of the influence of ultra violet rays. This relation is best seen in the following table:

Radiation	Killed Animals	Killed Eggs	Surviving Animals	Developed Eggs
Ultra violet	95.4%	68.4%	4.6%	31.6%
Radium	33.0%	70.9%	67.0%	29.1%

The experiments show that ultra violet rays also have a selective effect, but in a direction opposite to that stated in the Bergonie Triboudeau law.

The Permeability of the Skin for Ultra Violet Rays. Julius v. Ries Schweiz, Med. Wschr., No. 11, March 12, 1927.

According the Schubert, the blood, through the skin, absorbs ultra violet light. The author has obtained results which are contrary to Schubert's conclusion. The ultra violet rays do not penetrate through the skin, but only the visible violet and blue rays, and these are absorbed in the blood. The fluorescence phenomenon shows that visible rays are strongly reflected, making in this way a large part of the ultra violet light ineffectual.

If a piece of nickel oxide glass is held before the objective of a projection apparatus, only the dark ultra violet rays will penetrate.

The Transmission of Ultra Violet Rays Through Colorless Glass. W. Hausmann and O. Krumpel, Wiener Klinische Wschr., No. 9, March 3, 1927.

The inhabitants of the temperate and cold zones spend a considerable part of their lives behind closed windows. Therefore it is of the utmost importance whether the window glass used absorbs the rays entirely, or at least transmits part of them . Ordinary window glass permits as a rule the rays up to $\lambda = 325\mu\mu$ to pass. Therefore a not inconsiderable part of the rays which are biologically effective, penetrate even ordinary window glass. However, the rays concerned mostly in the prevention of rickets and similar diseases are absorbed. The ability of colorless glass to transmit ultra violet light varies. Some of the Scotch glass investigated by the authors, and some of the ordinary kinds of window glass showed a considerable permeability for ultra violet light. The authors demand that, in the building of dwellings, especially however schools, children hospitals, child asylums and hospitals, only glass with a good transmissibility for ultra violet rays be used. Similar efforts have already yielded practical results in England. The investigation of the various kinds of glass is done with the spectroscope and with the quartz spectograph.

Radioactor—A Simplified Radium Emanation Apparatus. Dr. Med. H. Zimmermann, Fortschritte der Medicin, No. 11, March 18, 1927.

The apparatus consists of a glass tube which is closed at both ends by hard rubber reinforced with leather. The radium carriers are inside the tube. The radium salt, in a water insoluble form, is combined with a porous substance. By means of a small rubber tube the water is drawn from a drink glass through

the apparatus, and thus activated. The emanation during 2 minutes amounts to 1200/1500 Mache per 100 cc.; 20,000-30,000 per day. After a rest of an hour the same degree of emanation can again be obtained. The apparatus was tested by the "Technischen Reichsanstalt" and found to contain 0.05 mg. radium element. The emanation, according to calculations, will have the same strength for five years and then slowly decline.

The apparatus is small, handy and compact. It can activate ordinary drinking water as well as mineral water.

Irradiations at Our Disposal as Substitutes for Ovary Irradiations in Young Women. Prof P. Wiener, Wiener Klinische Wschr., No. 6, 1927.

Only substitute methods for x ray irradiation of the ovaries are considered. The irradiation of the spleen is mentioned first. By means of these irradiations the author was able to arrest hemorrhages of a gynecological nature in a very short time, often in the course of a few hours. These however were only temporary results. More lasting results are only to be expected in certain forms of gynecological diseases in which the disease heals of itself during a momentary arrest of the extensive bleeding.

The second substitute method is Rontgen irradiation of the hypophysis. The author is able to regulate ovarian activity by the application of small amounts of Roentgen rays to the hppophysis. In this way it was possible to cause menstruation in women with amenorrhea, to regulate the menstrual cycle in abnormal cases, and to transform to normal menses, in regard to interval and amount, long lasting hemorrhages with irregular intervals. The Rontgen irradiation of the hypophysis is not dangerous, since only small doses are employed. (1/3 H. E. D.). It is possible to obtain the same favorable results with spleen and hypophysis where formerly the ovaries were irradiated.

In cases where spleen irradiation was ineffectual, attempts were recently made to irradiate the liver, with rather good results. The thyroid was also irradiated with good results in cases in which the hypophysis could not be treated.

Through a careful examination of the patients, it is possible to classify those patients which are especially adapted for a given form of irradiation (spleen, hypophysis, liver thyroid), and thus to choose the best form in the given case.

By irradiating the organs mentioned, with Rontgen rays it is possible to entirely dispense with irradiation of the ovaries.

Testing the Sensitivity of the Skin to Radiation. Prof. Leopold Freund, Wiener Klin. Wschr., No. 13, 1927.

In his interesting article on the cause of skin injuries, by roentgen rays, St. Simon reports a bad ulceration as a result of roentgen ray treatment in a very nervous patient who was weakened by various diseases and operations. He also reports a similar ulceration in a characteristic neuropathic woman. Since they were caused by rational roentgen doses, St. Simon attributes these injuries to the sensitivity of the patients, and adds that it would be desirable to be able to recognize such types.

The author reports his experiences with patients who were sensitive to roentgen rays, and mentions his test for determining the sensitivity of the skin to radiation. In his test he dispenses entirely with the inexact roentgen tubes as ray emitters, and uses in their place radioavtive preparations. If such a radium carrier (adequately filtered so that only Gamma rays are acting), is applied to the skin of various individuals, under analagous conditions, for an equal length of time, they will receive qualitatively and quantitatively, absolutely identical doses. By means of red color intensity scales, published by the author, the degree as well as the course of the erythematous reaction can be measured with satisfactory exactness, and can be graphically represented.

The manner of reaction of different individuals can be found, and practical conclusions drawn for the radiation dose which is applicable to each individual case.

Incidents Observed in the Course of Treatment with Ultra Violet Light. Dr. E. Juster, Journal De Med. De Paris, No. 21, May 26, 1927.

These incidents are not attributed to faulty technique. They are taken from many hundreds of cases treated by the author with ultra violet light. All cases reported in this paper had unexpected developments during the irradiation. They include one death, one hemoptysis, one impairment of the general condition (fatigue, emaciation, etc.), and two cases in which the menses reappeared in menopauses of eight and two years respectively. These incidents, exceptional as they are, demonstrate that ultra violet light, although indicated in many diseases, are contra-indicated in the diseases of certain patients.